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November/December 1986  
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ISSN 0744-8724

# commodore

microcomputers

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**Inside  
Lucasfilm's  
Habitat**





# **We just did something only the best can do! We made our award winning\* software for the Commodore™ 128 and 64 computers even better!**

## **Introducing ...**

**Pocket Writer 2**  
word processor  
**Pocket Planner 2**  
spreadsheet  
**Pocket Filer 2**  
database

## **New Features**

Our new Pocket 2 series offers features usually found only in much more sophisticated applications software. Features that include: compatibility with the new GEOS operating system†, ability to work with the Commodore RAM expander to allow a RAM disk, mouse support with pull down menus, 1571 burst mode for faster file loading, increased support for two single disk drives, automatic configuration for screen color, format and printer selection†.

Sophisticated software, yes, and still easy to use. You can be up and running in under 30 minutes even if you haven't operated a computer before.

## **2 Programs in 1**

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As a companion to Pocket Writer 2, a Dictionary Disk containing 32,000 words (expandable to 40,000) is available. The cost \$14.95 (U.S.).

For those of you who have already discovered the many benefits of owning Pocket software; we offer all registered owners an upgrade to Pocket 2 software for only \$19.95 (U.S.) plus 3.00 (U.S.) shipping and handling! Available only by writing to Digital Solutions Inc.

### **Pocket Writer 2 Word Processor In addition to the new features above ...**

Spelling Checker incorporated in program (requires a dictionary disk)  
Spelling Checker now runs over 300% faster than in original Pocket software  
Word wrap is now fully automatic†  
Ability to move columns  
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Fully automatic upper and lower case type conversion†  
Enhanced Delete process for word, line or paragraph  
Word Count feature for essays and assignments†  
Enhanced split memory mail merge option

### **Pocket Planner 2 Spreadsheet In addition to the new features above ...**

Individual column width selection now available†  
Multiple files in memory with cut and paste capability

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Global formatting option  
Enhanced row/column insert delete†  
Logarithmic and XY graphing capability  
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Number of rows increased from 99 to 250†

### **Pocket Filer 2 Database In addition to the new features above ...**

Dynamic calculations during data entry  
Intelligent re entry to enter/edit mode  
Easier file conversion from other software†  
Automatic index updating for constantly sorted file†  
Enhanced mathematical language including loops and labels†  
High speed sort using dynamic buffering†  
Automatic entry of repetitive data†

\* Commodore's Microcomputers Magazine, independent reviewers, rated the original Pocket Writer 128/64 and Pocket Planner 128/64 software the "Annual Best of 1986" in the productivity category.

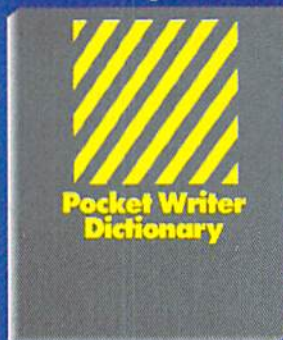
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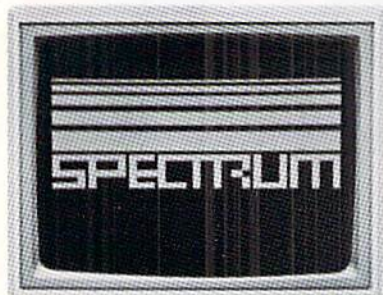
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# LETTERS

## Kung Fu: Way of the Exploding Fist

To the Editor:

Upon reading the software review "Kung Fu: The Way of the Exploding Fist" written by Mark Cotone in the July/August, 1986, issue, I discovered that most users of the program may not be grasping what I consider to be a profound statement issued by the programmer. Cotone stated that he was disappointed upon reaching the end of the game. To quote the author, "The only problem I encountered with the program is that it lacks a definitive conclusion. When you are finally skilled enough to beat the tenth opponent, you will be rewarded with...nothing. No fanfare, no animated emancipation, no extra life, nothing. Instead, you will continue to face a rejuvenated final foe until you slip and lose you life..."

Cotone may not be aware that this is one of the basic principles of Karate-Do philosophy. Through Karate-Do, one is expected to ultimately realize that to attain the goal is to not attain the goal. There is no reward in fighting, only in peace. Whether the programmer of *Kung Fu* realizes it or not, he has made the statement Martial Arts instructors have been trying to teach for many years. The ending of the game is very appropriate. "Nothing" is what the traditional Karateka strives for. It is the ultimate goal.

The game effectively illustrates that fighting leads only to more fighting until one is dead. Instead of violence, a man of Karate-Do will strive to achieve peace in an effort to triumph over the ultimate opponent: himself.

Please do not consider this a criticism of Cotone or his review. It is merely a statement to the public to try and dispel the violent concept of the Martial Arts proliferated by the movies and the media. It would be even better to see the publication of a Martial Arts game in which points are awarded for avoiding a fight.

Jeffrey Day  
Cleveland, Tennessee

## Buyer's Guide to Chess

To the Editor:

We were delighted to see Rick Teverbaugh's generous praise for our product,

*Paul Whitehead Teaches Chess* in your March/April, 1986, issue. My heart sank, however, when I read your July/August issue containing Ted Salamone's "Buyer's Guide to C64 Chess," which contained no reference to our product. Mr. Salamone was, I believe, unaware of our new product.

Those who read the "Buyer's Guide to C64 Chess" should be updated. If they haven't kept their March/April, 1986, issue containing Teverbaugh's review, they should know that we have a chess opponent program. It's called the *Coffeehouse Chess Monster* and it is given away free with each of our chess tutorial data bases. It has more features than *Sargon III*, it allows the user to develop his own game library, and it is integrated into each of our chess programs. The Paul Whitehead program (\$49.95), for example, has over 40 hours (320 KB) of commentary, instruction, and animation that was created by the former U.S. Junior and American Open chess champion.

The Whitehead tutorial has successfully taught the game of chess to third graders at a chess club in New York, and the depth of the information contained in the data base has fascinated adults who want to brush up on their game or teach it to their children. The annotated animations span from the absolute beginner stage through middle level of knowledge possessed by tournament chess players.

For those wishing to make the leap from intermediate to expert, we have just introduced a program for the more advanced player, *Jeremy Silman's Complete Guide to Chess Openings* (\$49.95). There are also extensive tutorials on the *King's Indian Defense* (\$39.95) and the *Najdorf Sicilian Defense* (\$39.95). Each of these tutorials include a free copy of the *Coffeehouse Chess Monster*. The user can automatically set up any tutorial position (or a new game) by calling the opponent program, then play it out and record it on disk. When the user finishes playing out the position, the software takes him or her back to the "bookmark" in the tutorial presentation.

Currently, we do not have national distribution. Anyone interested in these products should contact Enlightenment, Inc., 1240 Sanchez St., San Francisco, CA 94114, (415) 641-9131.

Martin Marshall  
President, Enlightenment, Inc.  
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## New Products from Micro Merics

Micro Merics has introduced the Microprint 2000, a dot matrix printer that features 120 characters per second, bi-directional logic seeking, and near letter-quality printing. The Microprint 2000 uses computer standard pin-feed paper, roll paper, or single sheets, and paper widths from 4 to 10½ inches.

The printer features a variety of print modes, with fixed or proportional spacing, and graphics. It features a user-replaceable 9-pin print head, a snap-in ribbon cassette, low power consumption, and a Centronics parallel interface (serial interface optional).

Micro Merics also offers printer interfaces that work with all the popular dot matrix and letter-quality printers, as well as a line of products for computer care: video display cleaning kits; disk drive cleaning kits; locking disk holders for both 5¼ and 3½ size disks; holders for 5¼ and 3½ disks that display individual disks with a flip of a dial; printer stand that adjusts to the size and shape of any printer; and a polarizing filter to decrease glare and improve contrast.

(Micro Merics, 9811 Owensmouth Avenue Unit 10, Chatsworth, CA 91311)

## Battle Iron Claw Update

In the May/June, 1986 issue of **Commodore Microcomputers**, we published "Robot Maker," an article by John Conway that turned a radio-controlled toy vehicle into a home robot, and we have received numerous inquiries about the availability of the Radio Shack Battle Iron Claw.

In Radio Shack's 1986 catalog, the Battle Iron Claw was listed for \$34.95. Unfortunately, however, Tandy Corporation (owner of Radio Shack) stopped purchasing this part some time ago. As a result, some Radio Shacks have them in stock while others do not.

However, there is a part that is essentially the same on page 109 of the 1987 catalog. It is the Mobile Armatron (part# 60-2396), and it retails for \$39.95. There are also two new robots which are easily adaptable and offer more functionality: the Robie Junior for \$79.95 (part# 60-2397) and Robie Senior for \$179.95 (part# 60-2398).



## Read and Write to IBM-compatible Files

S.O.G.W.A.P. Software has released **The Big Blue Reader** for the Commodore 128 and 1571 disk drive, a program that transfers word processing and ASCII files generated on most IBM-compatible software to Commodore DOS files, and vice versa.

**The Big Blue Reader** also offers the user the option of translating MS DOS standard ASCII characters to Commodore

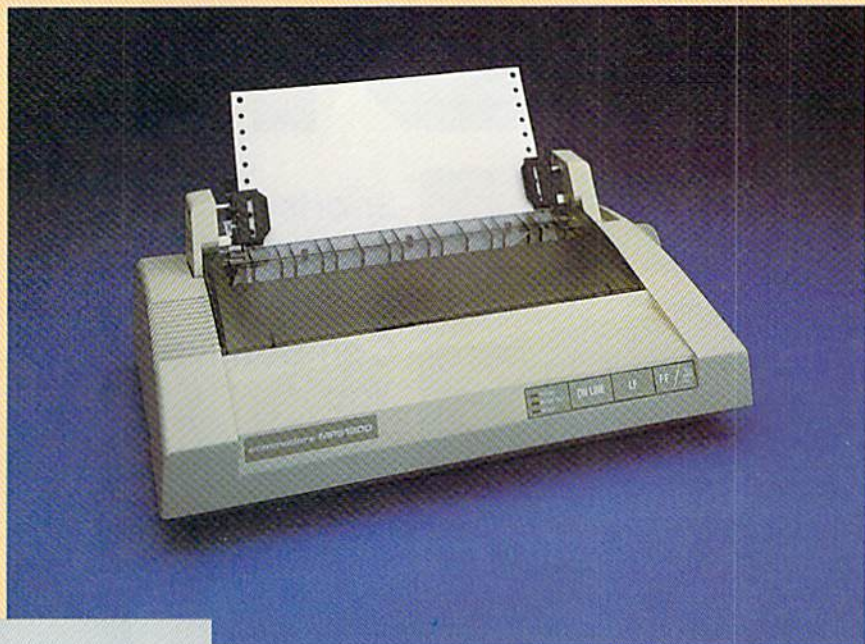
ASCII characters—and vice-versa—solving the problem of reversed capitals and lower-case letters that commonly results from any form of ASCII transfer between formats.

**The Big Blue Reader** retails for \$29.95. (S.O.G.W.A.P. Software, 611 Boccaccio Avenue, Venice, CA 90291)



## Commodore MPS1200 Printer

Commodore is planning a fall release for the MPS1200 printer, a bi-directional printer with a draft speed of 120 characters per second and a near letter-quality mode of 24 characters per second. The MPS1200 supports a large number of print types, including italic, compressed, pica, elite, expanded, reverse, superscript and subscript. The MPS1200 is equipped with a friction feed with a single-sheet feeder and a tractor feed. The MPS1200 is sold with two Commodore serial ports, which can be replaced with an optional Centronics parallel port.



## Commodore 1351 Mouse

Commodore is planning a fall release of the 1351, a new mouse input device for the Commodore 64 and 64C. The two-button mouse plugs into the joystick port of the computer and can be used as either a joystick or a true proportional mouse. Technical information is included on using the mouse within your own BASIC and machine-language programs.



## MSD Update

We have received verification that Micro Systems Development, maker of the MSD 64-compatible disk drive, is now known as MSD Systems, Inc. They are located at 10031 Monroe Drive, Suite 206, Dallas, TX 75229. Their telephone is 214-357-4434.

## Habitat Premiers

QuantumLink officially launched Lucasfilm's **Habitat** on Tuesday, September 16th, at the Palladium in New York City.

**Habitat** is the imaginary world that connects Commodore computer users from all across the country. Players enter **Habitat** through QuantumLink, the Commodore-specific telecommunications network, where they explore hundreds of regions ranging from islands and forests to cities like Populopolis. Within these regions, players direct their characters' actions in quests for adventure.

For further information, please see **QuantumLink's Habitat: The On-line World from Lucasfilm Games** in the feature section of this magazine. (QuantumLink, 8620 Westwood Center Drive, Vienna, VA 22180, 800-392-8200)



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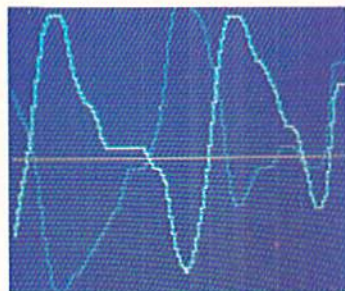


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notice. Not responsible for typographic errors.



## Q-Link Update

*QuantumLink, the inexpensive easy-to-use on-line service for Commodore 64 and 128 owners, continues its focus on entertainment and information.*

### Photo Gallery

Since the beginning of on-line communications, modem-owning computer users have been holding cross-country conversations in complete anonymity. Concealed behind a screen of text, many users find themselves asking the question "What do you look like?"

Q-Link's Photo Gallery satisfies this curiosity (and perhaps adds some humor) by allowing Q-Link members to see their on-line acquaintances via digitized photos.

A Q-Link member, David Sawyer, receives members' photographs and converts them into computer programs using special photographic equipment. Each program is then placed on-line in the Photo Gallery, located in the Just For Fun department, for other users to download and display. Digitized photos can be displayed on-screen or sent to a printer.

The future of digitized photos available on Q-Link is just beginning. Plans are currently underway to include photos of rock stars, wildlife and places to visit. So far, reaction to this has been quite favorable. As one on-line communicator put it, "A picture is worth a thousand ASCII characters."

### Auction

The Mall, Q-Link's shopping section, has just been expanded to include additional discounted products and a live auction. Q-Link members can see savings of up to 50% just by browsing through and bidding on a myriad of bargain merchandise.

Popular products such as 1200-baud modems, computer software and consumer electronics are among the variety of items auctioned several times each month. Members participate in the auction, located in People Connection, by simply placing a bid on the item they wish to purchase. Just like any auction, the highest bid wins.

### Habitat

Lucasfilm Ltd., the creators of *Star Wars*, has released its much-talked-about multiplayer full-color graphics game, *Habitat*. *Habitat* is the latest and most exciting addition to Q-Link's repertoire of on-line telegames.

Q-Link members playing *Habitat* take on the physical attributes of an on-screen character referred to as an Avatar. Avatars can roam various regions of this graphic environment and communicate with other Avatars (Q-Link members) from around the country. For more information on this revolutionary new game, read the *Habitat* article located in the feature section of this magazine.

### Casino

Q-Link has opened a new on-line establishment called "Rabbit Jack's Casino." This new casino captures the true atmosphere of the Old West with traditional games such as poker, bingo, blackjack and slot machines.

Each casino game uses realistic Las Vegas odds. To add to the reality, you can borrow money, order drinks and hold conver-

sations with other players. Within the casino, a Q-Link subscriber can bet on three-wheeled slot machines with a progressive jackpot, play five-card-stud poker or bingo with a group of Q-Link members, and go against the dealer in blackjack.

Rob Fulop, game designer/developer and professional poker player, has had long-time success in the computer game industry. In 1983, he won the video game of the year award for *Demon Attack*. Rob's work on these Q-Link games will make it the first casino in computer game history where you can have multiple players competing from home with full-color graphics and sound.

### Auditorium Happenings

Each month Q-Link's Auditorium features informative forums with Steve Punter, developer of the popular Punter Protocol, and Jim Butterfield, noted Commodore computer authority and software developer. Q-Link subscribers can either participate in these forums "live" or retrieve transcripts from the Auditorium archives after the various events have taken place.

### Software Library

Q-Link's Software Library, now contains more than 4,000 free programs. Each program description includes estimated download times, block size and clear program descriptions.

Finding and downloading these programs is much easier with Q-Link's new directory format. Directories can be downloaded and reviewed off-line, thereby eliminating the expensive and hurried task of reading program descriptions on-line. Here are just ten of the most popular selections.

#### 1. Robbers

An action game where you help the cops run around a maze to catch the robbers.

#### 2. Xeropus

Designed for "Galaxian" fans, this program provides great sound effects.

#### 3. Bluethunder

A helicopter game which uses a joystick to maneuver.

#### 4. Star Trek

Using the keyboard instead of a joystick, this game has exceptional graphics and sound.

#### 5. Spider Trap

Harder than it looks, the trick to this game is in the screen directions.

#### 6. Ultra Hi-Res (128)

A sophisticated graphics program.

#### 7. PHXTRM 8.7.LNX (128)

An advanced terminal program for the C128.

#### 8. 128/80 Disk Utility (128)

Uploaded by Jim Butterfield and written by Paul Blair of Canberra, Australia.

#### 9. Hi-Res Clock (128)

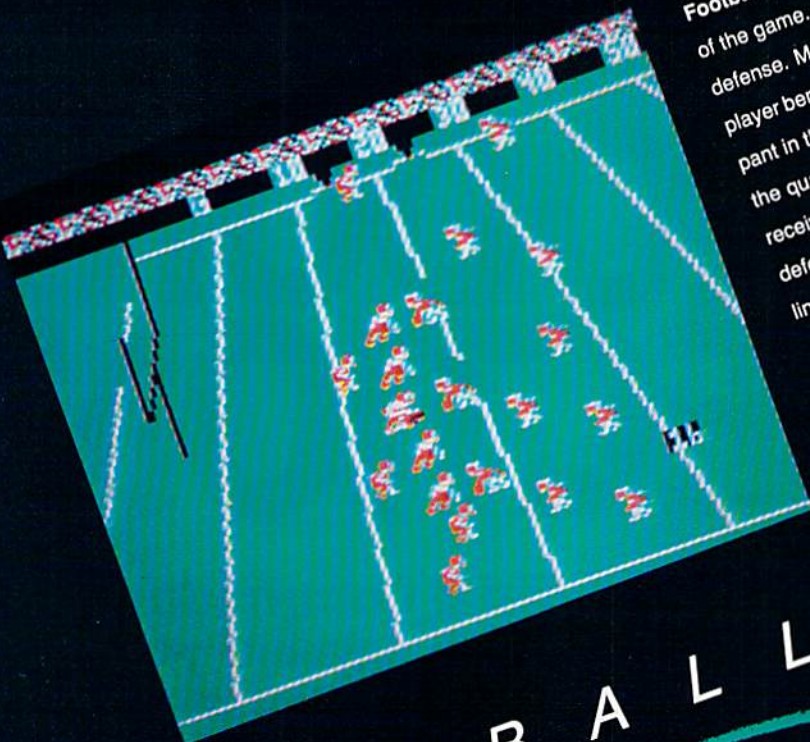
An on-screen clock display with both analog (round clock with moving hands) and digital displays. A bell even rings on the hour and half hour.

#### 10. Labelle De Lucie (128)

A challenging 80-column solitaire game.

(For additional information on QuantumLink, call 1-800-392-8200.)





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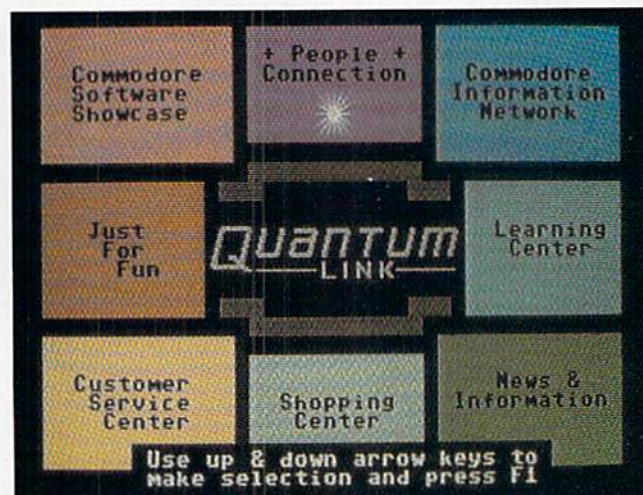
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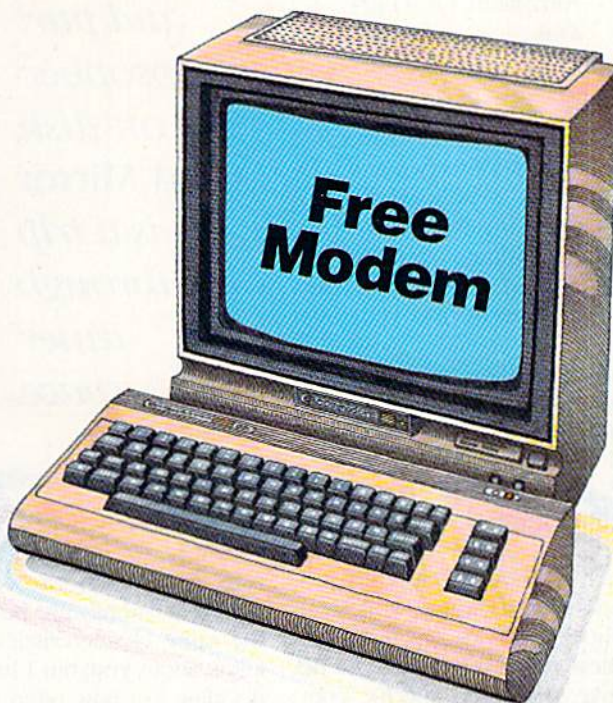
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# Mind Mirror

**Computer:** Commodore 64  
**Publisher:** Electronic Arts  
 1820 Gateway Drive  
 San Mateo, CA 94404  
**Medium:** Disk  
**Price:** \$32.95

Timothy Leary, who once advocated mind-altering drugs to deepen and refocus consciousness, is now showing us how to "tune in, turn on, and boot up" using our home computers instead. Electronic Arts' *Mind Mirror* provides amusement and insight into your own "bio-computer."

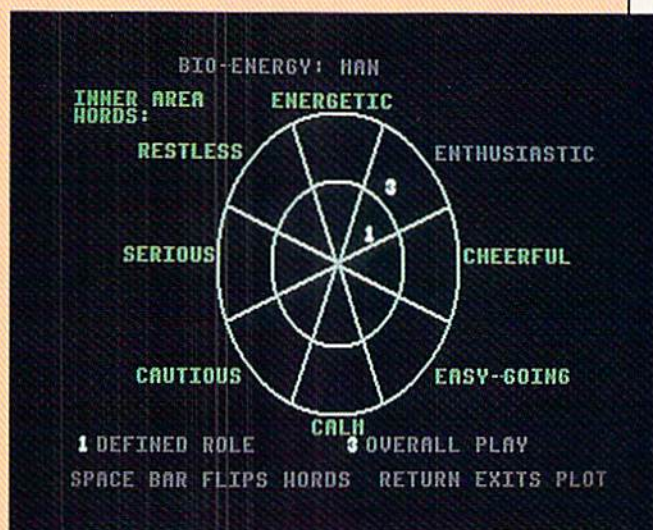
The *Mind Mirror* gets thoughts out of your head and into your 64 is by having you rate yourself, jobs, software, lovers, and virtually anything else.

At the Beginner and Intermediate levels, you choose either Mind Tools or Mind Play. These options offer further choices such as Psychological Insights, Career Productivity, Learning Skills, Head Fun, and Thought Games. The difference between these two levels is that as a Beginner you're limited to specific comparisons between two subjects, while at the Intermediate level you can choose up to four subtopics from a list of 12.

Both the Master and Professional levels let you choose any subject or concept under the sun for evaluation, then give you a choice between Auto-Play, where you rate the chosen topics alone or in cooperation with a friend, and Inter-Play, where you can play against up to three other people or teams. At the Professional Consulting level, however, you are required to select Psychology, Personnel Management or Education as a main topic. Once you make this selection, you're free to pick any subtopic that comes to mind.

No matter which level of play, category or subtopic you select, ultimately you must rate one or more things according to 16 human traits, such as grumpy, intense, aristocratic, flaky, inventive or rebellious. For each adjective (there are close to 30 in all), you must decide how often the term is appropriate to the subject. The scale has eight divisions from always to never, and you may use either the keyboard or a joystick to register your selection.

*Part game,  
 part tool  
 and part  
 philosopher-  
 on-disk,  
 Mind Mirror  
 is a trip  
 through  
 inner  
 space.*



Unfortunately, whether you're rating your wife, the Boston Celtics, the Jewish faith, or your favorite computer game, your evaluations must be made based on the same characteristics. Now I don't know about you, but I have a hard time deciding just how often the *Zork* series (one of the computer game choices at the Intermediate level) is grumpy, or just how much of the time I would consider the Palestine Liberation Organization to be peppy. At any rate, these are the type of descriptions *Mind Mirror* asks you to assign.

When you are done, the program sums up your responses with four new adjectives. For instance, based on my input at the ratings scales, *Mind Mirror* summarized my opinion of two late-night talk show hosts by stating that I consider David Letterman to be cheerful but irritable, innovative and uninhibited, and Johnny Carson to be easy-going, docile, impractical but influential. While these results are fairly accurate, they are similarly predictable. True to its name, the program "reflected" my opinions back at me.

In addition to summarizing your input in words, *Mind Mirror* also plots your opinions on four Mind Maps. The maps are drawn as two concentric circles divided like a pie into eight slices, and each slice is labeled with two adjectives. One is used for points that fall within the inner circle portion of the slice and the

other, usually stronger, describes those points which fall in the outer circle of the slice. The four maps are used to represent the Bio-Energy, Emotional Insight, Mental Abilities, and Social Interaction of the person or subject that was evaluated.

After you've rated one or more subjects and viewed the four Mind Maps, you may elect to save your opinions to disk for future reference and comparison, or play a Life Simulation as one of the people or subjects that was just rated. Each Life Simulation is a short, interactive text adventure that takes you through a series of unusual situations presented in a multiple-choice format. To complete a Life Simulation successfully, you must respond to each situation as the subject you rated.

Life Simulation is the most enjoyable part of *Mind Mirror* because it allows you to place yourself in someone else's shoes. Through Life Simulation, you could go through high school as Bruce Springsteen, or take on the playground bully as little Ronny Reagan. You should be warned, however, that *Mind Mirror* was designed for adults, so some of the simulations focus on adult themes.

*Mind Mirror* doesn't take itself too seriously. It can be thought-provoking, while remaining entertaining, and, like most good computer games, is best when played with a friend. It is the first in a series of mental awareness software to be designed by Leary's company. **G**

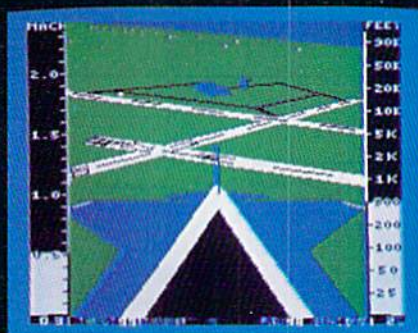




F-16 Dogfight with Enemy MiG-23 Fighters



F-18 on the Deck of a Nimitz-Class Aircraft Carrier (Control Tower View)



F-16 High-G Pullout over Detailed Wargame Scenery (Rear View)

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# Bop'n Wrestle

**Computer:** Commodore 64  
**Publisher:** Mindscape  
 3444 Dundee Road  
 Northbrook, IL 60062  
**Medium:** Disk  
**Price:** \$29.95

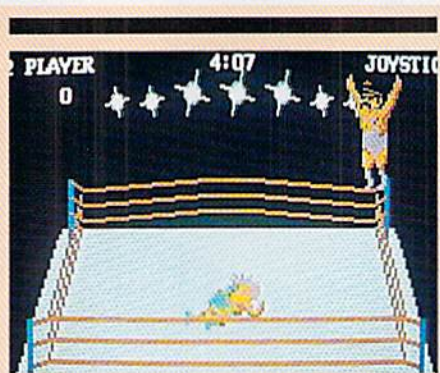
While *Bop'n Wrestle* can be described as a simulation because it duplicates pro wrestling, I prefer to call it an arcade game, since fast reflexes rather than mind power determine the victor. If you or your children spend Saturday afternoons watching television wrestlers, you are in for a treat. *Bop'n Wrestle* is probably as close as you will ever want to get to professional wrestling.

The setting is pretty simple. A four-posted wrestling ring takes up most of the screen. Two wrestlers stand ready in opposing corners below a bank of glaring flood lights. In the darkness beyond the ring, an occasional flash from a fan's camera blinks. If you do nothing, the two wrestlers automatically begin a computer-controlled demonstration match. One grabs the other and with an airplane spin tosses him to the mat. Then with villainous delight, he drop-kicks or knee-drops the motionless victim. To win the match, the wrestler must fall prone over his now unconscious opponent for the mandatory three counts.

Control the game by either joystick or keyboard, and compete with one or two players. Individual players must defeat nine computer-controlled wrestlers to win the World Championship Belt. Each attempt begins with Redneck McCoy (he likes to plant opponents deep in the ground like fence posts) and ends with Lord Toff (the most dangerous man alive).

Don't expect to win the belt your first time in the ring. Your nine opponents are all top-notch wrestlers who make few mistakes. And because there is no save or restart option, if you lose a single round, you must start over with Redneck McCoy. The best way to develop your skills, and definitely the most satisfying for beginners, is to compete with another human player. This gives you a chance to familiarize yourself with the different moves.

*Bop'n Wrestle* allows over two dozen



*Between you and the World Championship Belt are nine of the ugliest, meanest, biggest and strongest creatures ever to be called human.*

moves, even though the joystick can recognize only four at a time. The moves depend on the positions of the two wrestlers. For instance, if both wrestlers are standing and the joystick is pressed forward, the wrestler will move forward. If the button is pressed at the same time, the wrestler will attempt to grab his opponent. But if the other wrestler has fallen to the canvas, pressing forward with the button down will cause the standing wrestler to fall across the down wrestler in an attempt to pin him. If your wrestler is down, the same action will cause him to stand.

In short, there are a lot of things *Bop'n Wrestle's* wrestlers can do, but you'll have to spend some time in training to be able to quickly and accurately use all the moves. That's why a training period with another human player is so helpful—it gives you a chance to experiment without being pounded by one of the computer's pros. If you can't come up with another human to help, you can always select the two-player mode and practice wrestling an immobile opponent. This way you can stomp, body slam and elbow drop to your heart's content without fear of retaliation. With a little practice, *Bop'n Wrestle's* controls become second nature.

It's a good idea to watch some of these computer-controlled matches before entering the ring the first time. You can learn a lot about what works against each

opponent by observing his matches with other wrestlers. You can also use these demo matches as training films to spot the wrestlers' weaknesses.

When you are ready to enter the ring, you assume the character of Gorgeous Greg. Your goal is the World Championship Belt, but between it and you are nine of the ugliest, meanest, biggest and strongest creatures ever to be called human. They include Flying Eagle, Vicious Vivian, Redneck McCoy, Angry Abdul and a few other equally unsavory characters. None will hesitate to beat you senseless.

The multitude of "pro" moves possible with *Bop'n Wrestle* is what makes the game so realistic and fun. The possible moves include the airplane spin, arm twist, back breaker, body slam, clothesline, drop kick, flying body press, and full nelson, knee strike, reverse suplex, pile driver. But the most dangerous and spectacular one is called a turnbuckle fly. If this one is executed properly, it will almost always end the match in your favor. But if you make a mistake, you will surely lose.

The turnbuckle fly is normally performed when your opponent is already injured and lying motionless near the center of the mat. To perform it, you simply have Gorgeous Greg climb the turnbuckle attached to the post of the ring and then, like an attacking falcon, pounce on his opponent. If he lands on his victim, the win is in the bag, but if the guy moves or Gorgeous simply misses, the impact will knock your wrestler senseless, giving his would-be victim a chance to finish him off instead.

When a wrestler is pinned, the three-count begins using both a screen display and a synthesized voice. It has been my experience that once the count has begun, the match is as good as over. You can try to coax Gorgeous back to his feet by juggling the joystick, if you start before the count begins.

*Bop'n Wrestle's* wrestlers are well defined, and their actions accurately recreate those of the pros. The twists, drops, grunts, poundings and gut-bursting knee-drops will make you wonder if you'll ever go back to television wrestling.

If you're looking for mind-expanding software, this is one to pass, but if you are looking for simple arcade fun, or perhaps a release for inner anger and primitive pleasures, this one is waiting for you. **C**



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# GBA Championship Basketball: Two-on-Two

**Computer:** Commodore 64  
**Publisher:** Gamestar  
 Activision  
 2350 Bayshore Frontage  
 Road  
 Mountain View, CA 94043  
**Medium:** Disk  
**Price:** \$34.95

Designer Troy Lyndon may not yet have a fan club, but he deserves one. With a portfolio that includes *Mr. Do!*, *Lost Tomb* and last year's smash hit, *Star Rank Boxing*, and his latest effort, *GBA Championship Basketball: Two-on-Two*, this talented designer should earn widespread recognition. With the help of Gamestar veterans Scott Orr and John Cutter, *Two-on-Two* has the look and feel of a classic.

Before starting a game, each player must rate his or her abilities in the Scouting Report screen. On a scale of two (lowest) to six (highest), players choose their skills in three areas: inside vs. outside shooting, dribbling vs. stealing, and quickness vs. jumping. This way, players must develop a pre-game strategy and assign priorities. Because no one is perfect, you will have to be strong in one skill and weak in another, or average in both. All computer-controlled opponents in the game have pre-set ratings.

*Two-on-Two* can be played by one player against a computer team in exhibition and league games, two players or opposite teams battling head-to-head, or by two players working together against the computer. Each game consists of four six-minute quarters with possible overtime. Unless two humans are on the same team, each play option requires the enlistment of a computer-controlled teammate, picked from a ten-man roster in the Superstar Draft. The names may be changed, but each of these players are patterned after NBA stars like Magic Johnson, Larry Bird and Kareem Abdul-Jabbar.

Exhibition contests are great for quick



*Each of your computer-controlled teammates are patterned after NBA stars like Magic Johnson, Larry Bird and Kareem Abdul-Jabbar.*

games and as a warm-up to grueling League play. League play consists of a five-game season culminating in divisional playoffs and finally, the GBA Championship game. It is a tough schedule to follow, but it holds high rewards.

The last pre-game choice is your division. There are 20 computer teams divided into four groups of increasing skill. Unlike most sports games, *Two-on-Two* offers competition that doesn't wear thin after repeated play. The North division is the easiest (but far from a pushover), followed by the South, East and West. The all-star West division boasts overwhelming talent.

Although the game is played full-court, you only see half the court at a time. With change of possession, the screen perspective changes as the offensive team crosses center court. Except for the two-player teammate mode, every change of possession causes a playcalling window to appear at the top of the screen. As the offense approaches mid-court, each team has approximately seven seconds to select a play. Offensive plays include Left Wing, Right Wing, Top of Key, Basket and Screen. The defense

can choose between Low Zone, High Zone and two variations of Man-to-Man coverage.

For new players, it's a good idea to warm up in the Practice mode before tackling the big guys. One or two players can practice shots, rebounds, tip-ins and fancy footwork. You can even play an impromptu game of one-on-one, horse or "Around the World."

A few minutes on the court and you'll discover the driving force behind *Two-on-Two*: teamwork. Hogging the ball is natural in basketball, but greed will only land you a spot on the losing team. When using a computer teammate, don't be afraid to let him take control. Each computer-controlled player has been programmed to react intelligently.

If you find that you can hardly ever make a basket, especially from the outside, return to the Practice mode and work on your release. There's much more to shooting than simply pressing the joystick button. In relation to your skill rating, timing is everything. The same holds true for defensive blocking, tip-ins and rebounds.

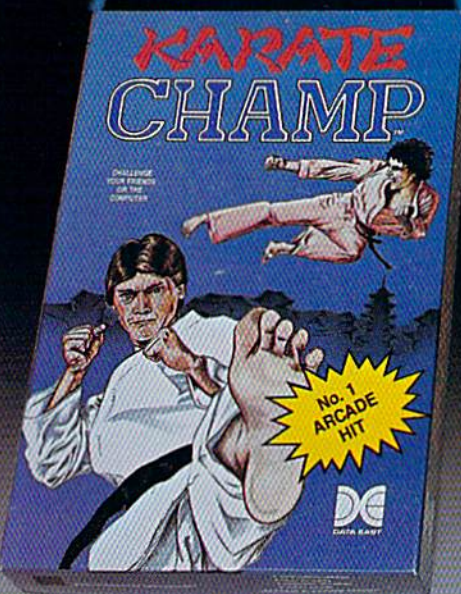
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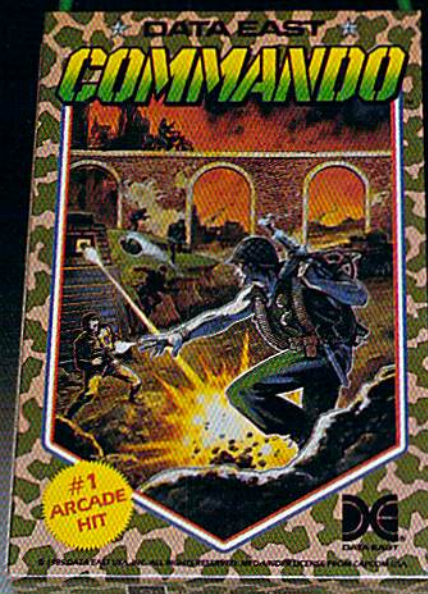
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Inside a Commodore 64.

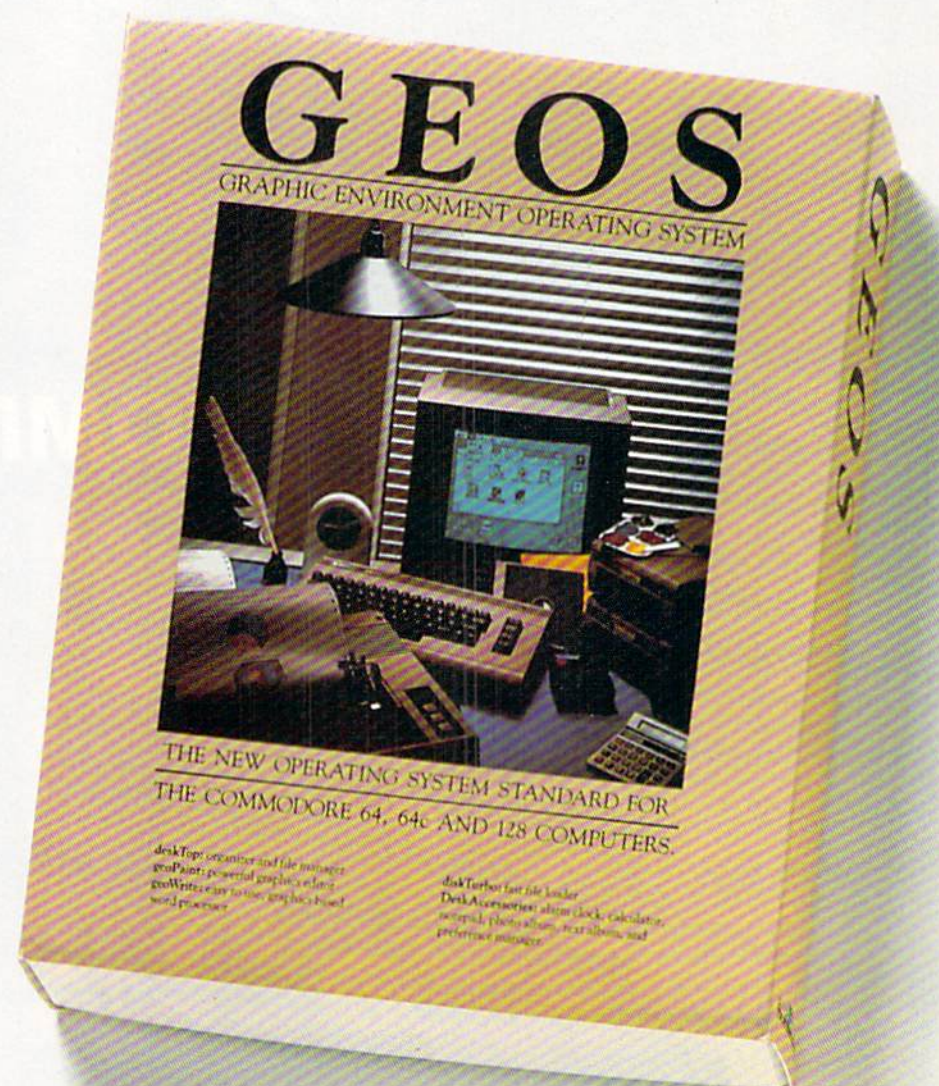
It's called GEOS. And it turns any Commodore into a powerful PC that holds its own against any computer, no matter what kind of fruit it was named after.

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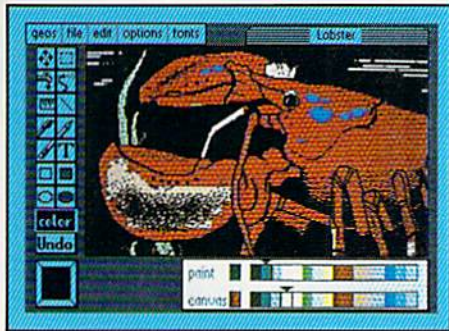
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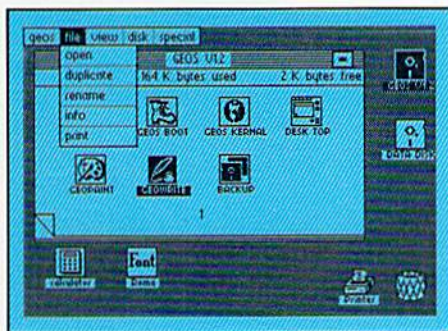
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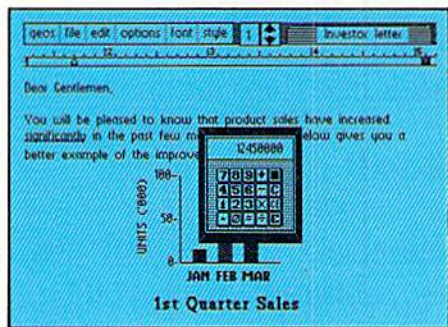
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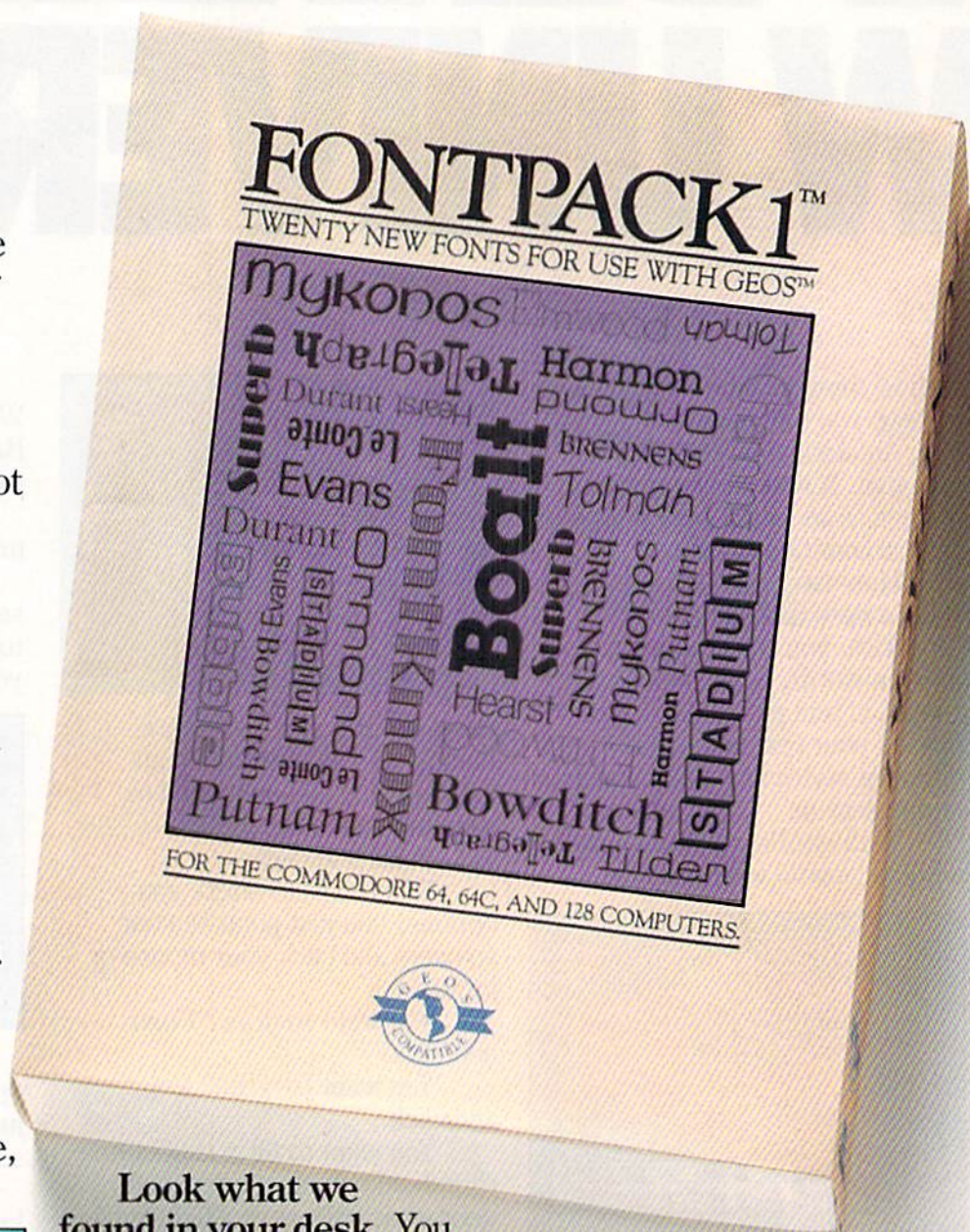
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Bubble	telegraph
Durant	Mykonos
Harmon	Superb
Ormond	Tilden
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Putnam	

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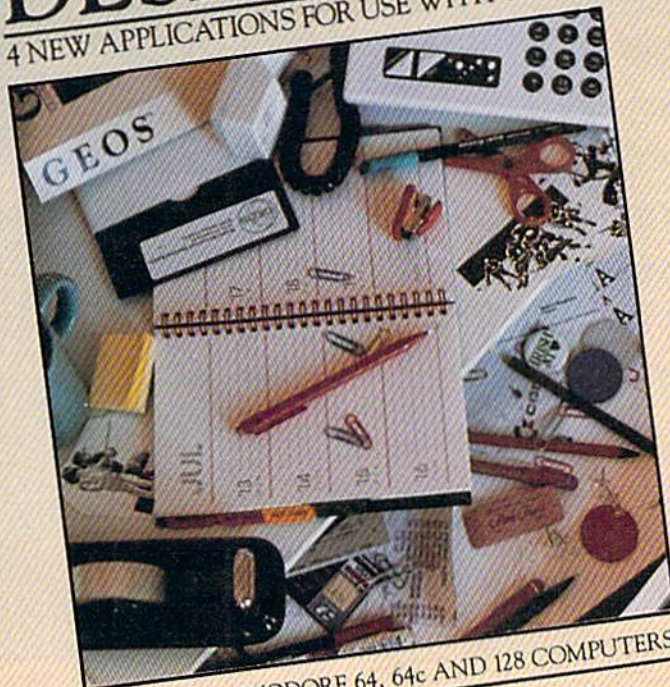
The Desk Pack Calendar pops up whenever you need to plan your schedule. And since it's valid until the year 9999, you'll never have to miss one of those swell family



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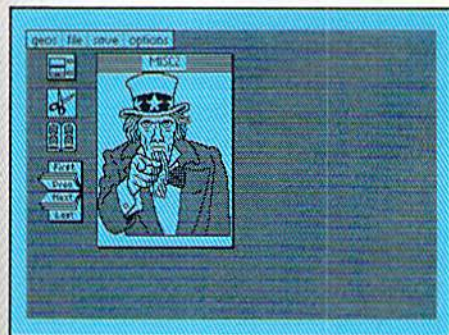
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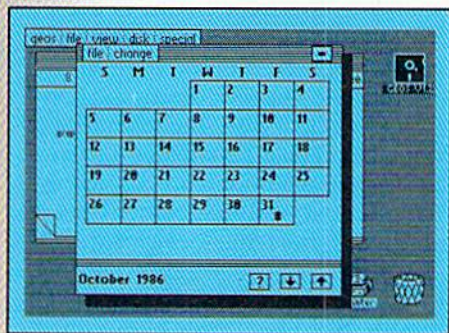
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# Infiltrator

**Computer:** Commodore 64  
**Publisher:** Mindscape  
 3444 Dundee Road  
 Northbrook, IL 60062  
**Medium:** Disk  
**Price:** \$29.95

It won't take a genius to deduce that much of *Infiltrator's* charm comes from the fact that the creator has—wittingly or not—borrowed some of the best features of several previous games. What is important here is that it works, and the result is a game you'll come back to again and again, not just to better your score, but to appreciate the humor of programmer Chris Gray.

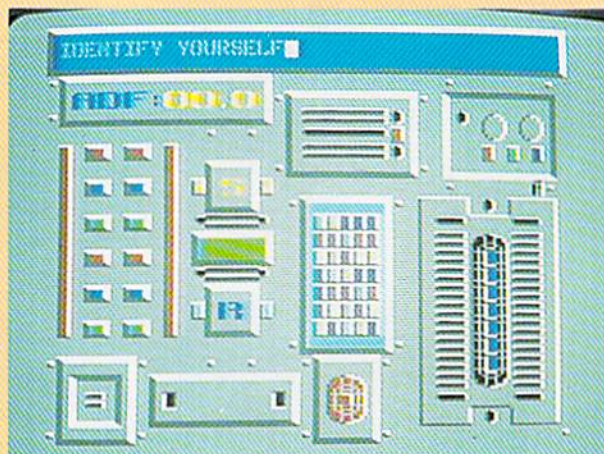
In the documentation, there is a prequel to explain who you are and how you got to where you are. Thankfully, it is not one of these short novels that have cropped up recently. *Infiltrator* can stand alone and does not need the prequel, but read it anyway. It sets the tone of the game and lets you know at the outset that nothing here should be taken too seriously.

Your first mission is to fly the world's most sophisticated helicopter into an enemy stronghold to photograph secret documents. The game begins as a helicopter simulation: The instruments are readable, response is quick, and banking or turning the chopper moves the horizon counter-clockwise. The instruments include an on-board computer for navigation, communication and damage assessment, and multiple screens keep your control panel from being cluttered.

Along the way, you are challenged by jet aircraft. They could be yours or the enemy's, but you won't know until you've responded to their demands for identification. An incorrect response results in tragedy. You do have air-to-air missiles and a machine gun on board, but I suggest that you use your WhizBang Turbo Booster and zip away at 900 knots.

Assuming you survive these encounters, the second part of your mission takes place on the ground. Land at the stronghold using the Whisper Mode, avoid or immobilize the patrolling guards, find the key to headquarters, enter and photograph the documents, and do it all in just 20 minutes. If you suc-

*By combining the best features of other games, Infiltrator becomes copy of none and a satire of many.*



ceed, you're ready for the second mission—but it's doubtful you'll get this far on your first or even third try. This game is extremely difficult.

The Damage Report screen is similar to the one in *Gato*, the submarine simulator. The moving hands on the controls are reminiscent of those in *Arctic Fox*, the tank simulation for the Amiga. Your helicopter possesses the best features of *Airwolf* and *Blue Thunder*, and the multiple screens for control panels are similar to those in *The Dam Busters*. Your character, Johnny ("Jimbo-Baby") McGibbits is as talented as Buckaroo Banzai, and the references to your ultimate foe leave no doubt that he is modeled after Muammar Gaddafi, the leader of Libya.

Yet far from being reasons to avoid the game, these are reasons to purchase it and to savor it. Because of this amalgamation, the game achieves its own originality. By combining the best features of

other games, *Infiltrator* becomes a copy of none and a satire of many.

The documentation further carries this out. If you can imagine a high risk, high security mission being planned and implemented by people who talk and act like Hollywood agents, you'll have a pretty good idea of what is going on here.

Graphics and sound are excellent, the kind of quality we expect from Mindscape. The play of the game is not easy, but it can be mastered. If there is any shortcomings at all, it is in the fact that there are several waits for disk access during the game. This tends to slow things down just a bit, though the wait may give you breathing space to plan your next move.

Mindscape has a winner with *Infiltrator*. Programmer Chris Gray has a unique sense of humor which gives *Infiltrator* character all of its own. If you miss it, you've missed a good one.

C



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# Hacker II: The Doomsday Papers

**Computer:** Commodore 64  
**Publisher:** Activision  
 2350 Bayshore Frontage  
 Road  
 Mountain View, CA 94043  
**Medium:** Disk  
**Price:** \$34.95

Those players unfamiliar with Steve Cartwright's approach to game design should be forewarned about the contents of Activision's new *Hacker II: The Doomsday Papers*. The instruction booklet to this adventure is not missing. It was never written.

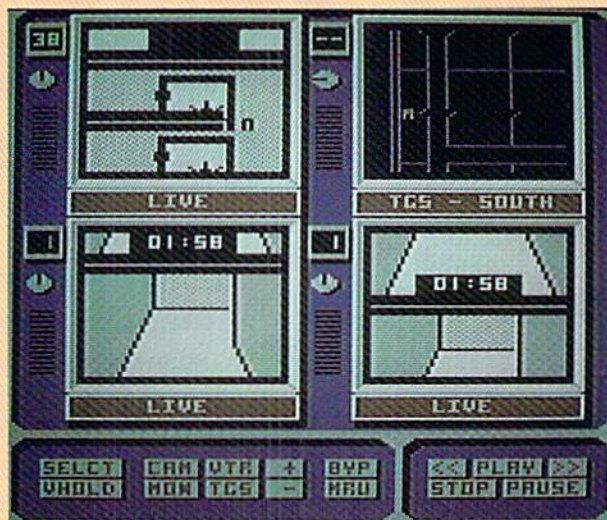
As in last year's *Hacker*, a game in which a security malfunction granted users "accidental" access to an unknown private computer system, players are once again presented with a contest with no rules and few clues outside of basic log-on instructions. As the game begins, there is no apparent storyline, characters or object. But what starts as a confused search for clues will soon transform into a full-blown intricate graphic adventure. And you, the innocent user who was just trying to kill a couple of hours at the keyboard of your Commodore 64, will suddenly find yourself in a position of staggering importance. By game's end, the fate of the entire free world hinges on you.

The *Hacker II* plot stems from the reputation you earned as a computer pirate in *Hacker*. Knowing your notoriety as a code breaker, super sleuth, and all around smooth operator, the CIA has contacted you with a mission of pressing urgency. Through reliable information channels from Russia, our government has learned of a diabolical scheme set to undermine the very foundation of the United States. The plans to this sinister plot, masterminded by the infamous Alexander Cherkazov and known only as the Doomsday Papers, have been traced to a heavily guarded military base set deep behind Soviet lines. If you can use your skills to somehow get a look at these plans, there is a good chance that a suitable defense can be devised in time.

All of your covert activities are initiated

*Knowing  
your  
notoriety  
as a  
code-  
breaker,  
super  
sleuth,  
and all  
around*

*smooth operator, the CIA has contacted  
you with a mission of pressing urgency.*



from your keyboard. The CIA has patched you into their own mainframe computer, which in turn has been secretly linked, via satellite, into the enemy installation's internal surveillance system, known as the Multi-Function Switching Matrix (MFSM). This is a highly advanced multi-monitor video scanning system, the kind you're likely to have seen at the entrance to posh apartment buildings or at the security desk of a large business. To protect against unwanted intrusion, cameras have been set up at strategic points all around this Soviet base.

In a masterful console that will act as the play field for 90% of the game are four video monitors for viewing. By turning a channel selector, you can check movement and activity in any hall and room in the complex. In essence, your hook-up has given you control over the key functions of this MFSM. But that's all the information you are given. What you should do from here, and how, where and when it should be done, is for you to decide.

Prospective hackers who feel a bit intimidated by this game design and are bothered by the thought of dropping cash on a contest they might never quite understand, should be assured that this adventure is both solvable and satisfying. Anyone with a little ingenuity and patience is sure to pick up the underlying play mechanics quickly, and should have

no trouble devising a workable strategy for a successful mission.

A well designed orientation segment of the game, where the user is initially contacted by the CIA, acts as a guided invitation to play. Here, under the guise of an instructional briefing, the first few key pieces to the puzzle are presented. By following the path of these furnished clues, more will become available. Soon, the overall picture will start taking shape, and you'll be on your way.

Technically, this program reaches the high standards that we've come to expect from Activision. The graphics are crisp and exacting, the animation smooth, and the sound effects appropriate. Together, they create an atmosphere that's both responsive and realistic. In fact, the MFSM security systems video display is so true to life that an on-screen vertical hold knob has actually been included for each of the four monitors. That's right, amid the tension and danger of an undercover spy mission, you might occasionally be forced to pause the entire operation to adjust picture roll. What a great touch!

If you liked *Hacker*, this sequel is sure to please. It incorporates the same suspense, action and challenge that made the original such an acclaimed hit. If you're new to this unorthodox style of play, don't be apprehensive. The aim of

*Continued on pg. 187*



# COMMODORE CLASSICS!

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# Shadowfire

**Computer:** Commodore 64  
**Publisher:** Mindscape  
 3444 Dundee Road  
 Northbrook, IL 60062  
**Medium:** Disk  
**Price:** \$29.95

Mindscape's Beyond label is a showcase for some of the best recreational software to emerge from Britain. One of the highlights in this series is *Shadowfire*, a graphic adventure with an offbeat theme.

This tale of the distant future takes place in a remote corner of the universe, in a galaxy united by a federation known as the Empire. Lurking beneath the tranquility of these worlds, General Zoff, traitor to the Empire, bides his time aboard the skyfortress Zoff V, plotting to overthrow the Emperor.

Plans for a new starship, code-named Shadowfire, will make it possible to jump from planet to planet. Should these plans fall into Zoff's possession, he would have the means to destroy any planet within the Empire. The task of delivering the Shadowfire plans to the Emperor was up to Ambassador Kryxix. The plans were hidden within a micro disk embedded in the Ambassador's spine. Unfortunately, he has been captured and is being held prisoner aboard Zoff V. In a matter of hours, Zoff's men will discover the plans.

As the leader of Enigma, the Empire's top covert action group, you must direct a team of six recruits in a daring search-and-destroy mission. You have exactly 100 minutes to rescue the Ambassador, capture General Zoff, and destroy his deadly skyfortress. The fate of the Empire rests in your hands.

As director of this seemingly impossible raid, your job is to make decisions, issue orders and study the results. Each character under your command has special skills which you must exploit to the fullest if you ever hope to win the game. The success of the mission hinges on the performance of each character under your command.

Docked alongside the enemy spacecraft, your first priority is to equip each character and beam them aboard. The Zoff V is a large ship, with multiple areas connected by maze-like corridors. You have a choice of three areas for the initial boarding: the Fighter Bay, the top of the Shuttle Bay or the bottom of the Shuttle



*As leader of a top covert action group, you must direct a team of six recruits in a daring search-and-destroy mission.*

Bay. The best strategy is to assign one pair to each location and cover as much area as possible. It's also a good idea to use characters capable of unlocking doors, which in turn allows the others to move about the ship with less trouble.

*Shadowfire's* play field is divided horizontally into two sections. The Mission Control screens are on the top and the Character Command screens are on the bottom. The Mission screens show which character is in play, an overhead view of their location, each member's current status, and the countdown clock. The lower half controls each team member through four different screens: the Status screen, Objects screen, Movement screen and Battle screen.

The Status screen uses horizontal bar graphs to display the character's agility, stamina, strength and weight. All the characteristics are interrelated, and some team members fare better than others. Novice players should pair strong and weak characters to get a balance.

The Objects screen contains a list of valuable items needed to complete the mission. Each object should be assigned to characters according to their skills. These include various weapons, tool kits, key cards (color coded for opening locked doors), and a self-destruct unit to blow up the Zoff V.

Finally, the Movement screen lets you choose from eight possible directions, while the Battle screen allows you to command each character to attack, defend or retreat from combat. The display indicates which weapon is in use and the type of enemy encountered. Zoff V is pa-

trolled by high-ranking marshalls, squad leaders, troopers and even an invisible pet alien known only as the Phantom. Each requires different strategies.

*Shadowfire* is quite fascinating. Game play is deceptively subtle, yet totally nerve-wracking. It's also a hard game to categorize, since it draws inspiration from a number of sources: role-playing character development, adventure game puzzle-solving and intricate graphics.

You can play the game using the keyboard, joystick, trackball, paddles or even a light pen. Commands are issued through a system of icon-based menus. *Shadowfire* isn't the first program to use this technique, but rarely has it been used so smoothly. The only problem that arises concerns the identification of several icons. British software is notorious for its meager documentation, and many of the game's symbols do not appear in the instruction manual. But most players will discover the meaning of these mysterious icons after just a few games.

Although *Shadowfire* is played in real time, there is no animation or traditional arcade action in the game. Instead, the frantic pace is set by the player, racing the clock as he or she tries to control six characters at once. First-time players will find *Shadowfire* to be a very complex and demanding game. Once the initial difficulty wears off, however, game play is fluid.

A challenging storyline, terrific graphics and mentally exhausting game play make this program an exceptional value. Gamers looking for something out of the ordinary will love *Shadowfire*. C



# The Flying Simulations Chosen by Real Pilots



The toughest evaluators of flying simulations aren't computer buffs. They're actual pilots and flight professionals. And when these flyers talk authenticity and realism, one name comes up again and again: MicroProse Simulation Software. We're used to this kind of stringent comparison; our company president is a former fighter jock with 3,000 flying hours in his logbook.

Take the evaluation of Senior Editor David Martin, in *Private Pilot* magazine's August 1986 issue. Martin, a former Navy aviator who has flown almost everything with wings, reviewed five MicroProse programs, including the bestselling *Solo Flight* primary flight simulator. "I'd not have believed it possible..." he wrote, "Pilots of all sorts will be fascinated

by these aviation games."

Mr. Martin isn't the only pilot who's spent many of his recent leisure hours with MicroProse simulations. Comparing his experience in training real flyers with the instrument layout found in *Solo Flight*, Cessna Flight Instructor Mark Rice told us "the instrument flying segments are very similar to the real thing — you're up in the clouds and using your readings to guide the aircraft."

Concorde pilot and former RAF jet flyer John Hutchinson reviewed MicroProse's sport flight *AcroJet* for the British press. His conclusion: "This simulation is one that really does live up to its real-life counterpart... I find *AcroJet* completely absorbing and very exciting." High praise, from the man who flies the world's fastest airliner...

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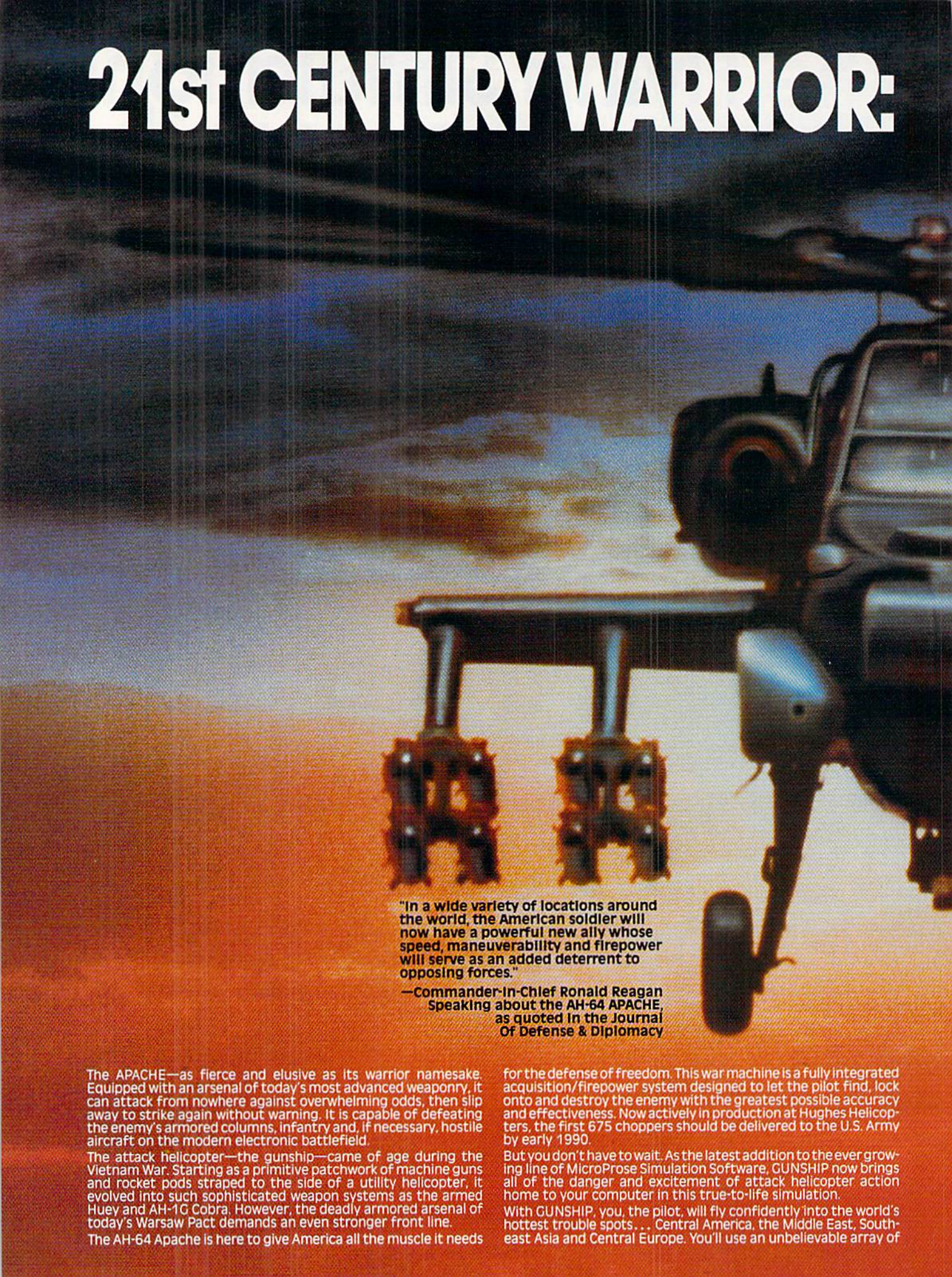
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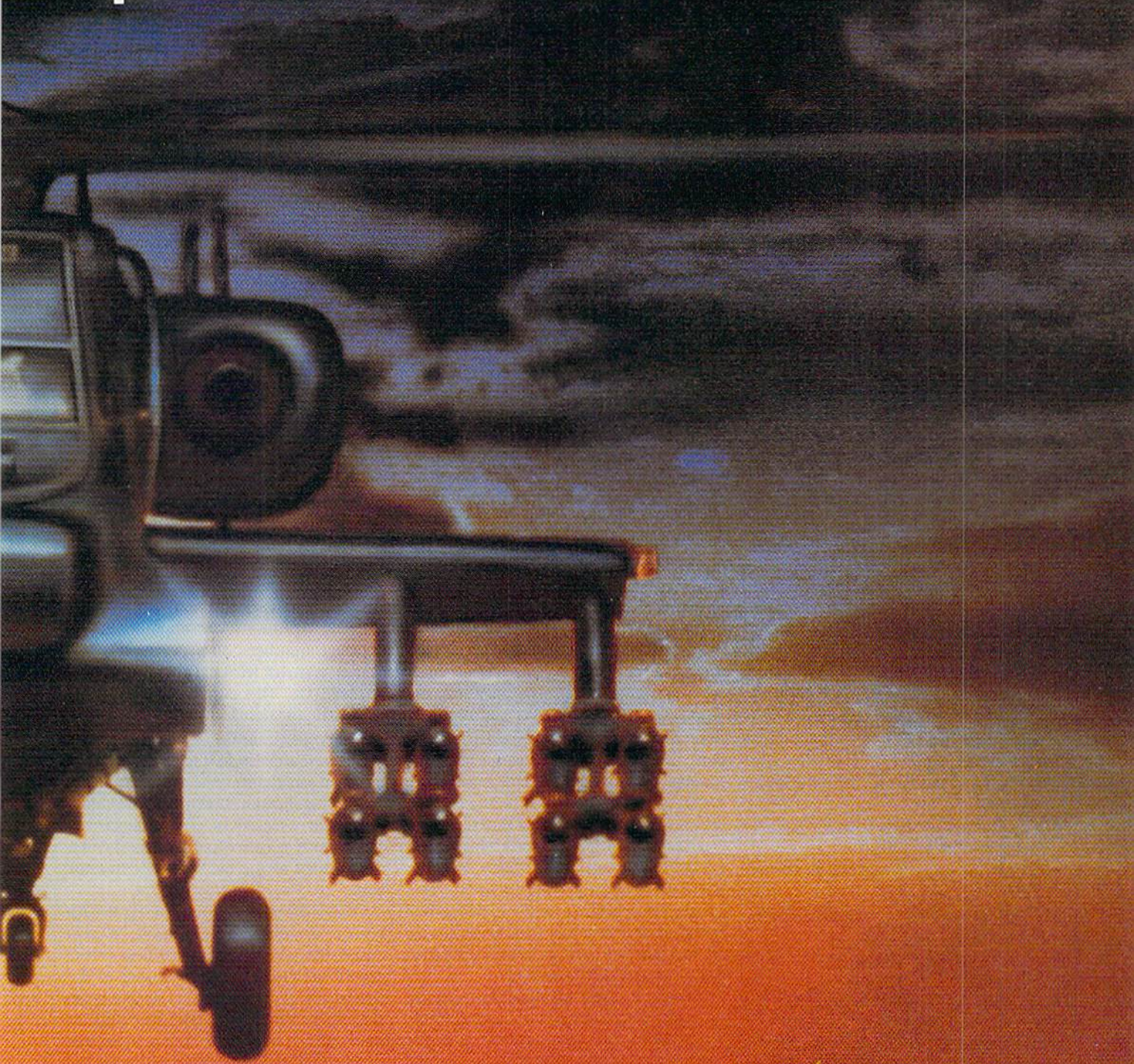
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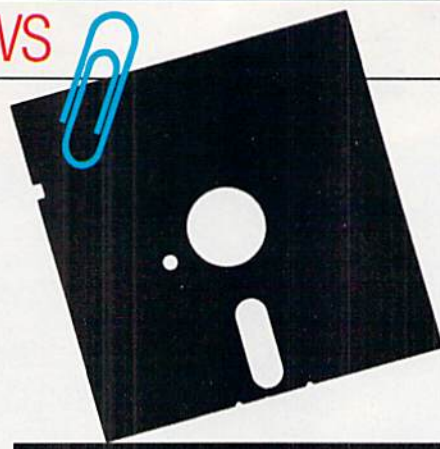
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## PaperClip II

**Computer:** Commodore 128  
**Publisher:** Batteries Included  
 30 Mural Street  
 Richmond Hill, Ontario  
 L4B 1B5 Canada  
**Medium:** Disk  
**Price:** \$79.00



The evolution of Batteries Included's word processor *PaperClip* continues with the introduction of version two for the Commodore 128. This heir to the *PaperClip* name meets and, in some cases, surpasses the standards its predecessors established. It is fast, powerful and flexible. But most of all, it is a "can do" word processor, having all the features a writer would want in a word processor, plus some.

- Does it employ professional editing functions? Yes.
- Can it soft hyphenate (properly break) long words? Yes.
- How about headers and footers? It has them both.
- Is a dictionary/spell checker included? Yes, 38,000 words.
- Will it work with both 40- and 80-column monitors? Yes.
- Will it work with any disk drive? Yes.
- Can it use the 1571 disk drive's burst mode? Yes.
- Will it work with more than one drive? Sure will.
- Can text be formatted wider than 80 columns? Up to 250.
- Can word wrap be toggled on and off? Yes.
- Does it use PRG (program) or SEQ (sequential) files? Both.
- Can *PaperClip II* manipulate columns of text? Yes.
- Does it have math functions? Yes again.
- What about Global searches, linked files, integrated software? Yes, yes, yes.

After *PaperClip II*'s command structure is mastered, writing, editing and altering text is fast. Features a professional writer would want, like subscript, superscript, boldface, underline and italic text; set, move, replicate and sorting columns; linked files; and global manipulation are all included.

*PaperClip II*'s editing functions re-

### *PaperClip II packs both a word processor and a terminal program.*

spond faster than any I've seen on earlier word processors for either the 64 or 128. Anyone who has endured a word processor with sluggish keyboard response will love this one. The program responds to the keyboard very quickly, in some cases almost too fast. I found that some commands, like defining a range, responded to keyboard pressure so quickly I had to be careful not to define beyond my intended ending. There is little danger of typing faster than *PaperClip II* can print to the screen, even in insert mode.

Users of the first version of *PaperClip* will have no trouble getting *PaperClip II* up and running. Because the program auto-boots, getting started requires only that you put the program disk in the drive and reset the computer. The major editing commands revolve around the CTRL key. Pressing it first, followed by a second key, activates most functions. For example, CTRL and I inserts a blank line, CTRL and L loads a text file, CTRL and the cursor keys scrolls the text. This command structure will be welcomed by users of earlier versions of *PaperClip* or similarly structured word processors like *WordPro* and *Easy Script*.

However, many neophytes may question the logic of a few commands like CTRL and H to add a row of numbers and CTRL and J to load a sequential file. Because neither help screens nor a quick reference card is included, users must either memorize commands or thumb through the hefty user's manual to refresh their memory. Appendix A lists most commands.

One of the most helpful features is the video dump option. Instead of dumping text to the printer to see if all the format

commands are set correctly, the output can be previewed on the monitor's screen. This allows adjustment of margins, changes in page breaks, correction of formatting errors, and testing of headers and footers and page numbering before directing the output to a printer. While using an 80-column display monitor, output can be toggled between 80, 120- and 320-column screen prints without disturbing the text buffer.

This display shows how text will appear, including headers, footers, page numbers, special text fonts (underline, boldface) and multiple line spacing. It simplifies formatting text while also saving time, printer wear and paper. Once you've used a word processor with this option, you'll never be happy without it.

Formatting text with *PaperClip II* couldn't be much easier. Like most word processors, format commands here are embedded in the text by placing a special format marker (created by pressing the English pound key) followed by special command codes. These codes electronically flip switches inside the printer so instead of printing the letters forming the command, special tasks are performed, such as centering text, changing margins, printing footers or increasing the page number count. A simple command would look similar to this: ">ju1:lm10." This command line would start justifying text and set the left margin to the tenth column.

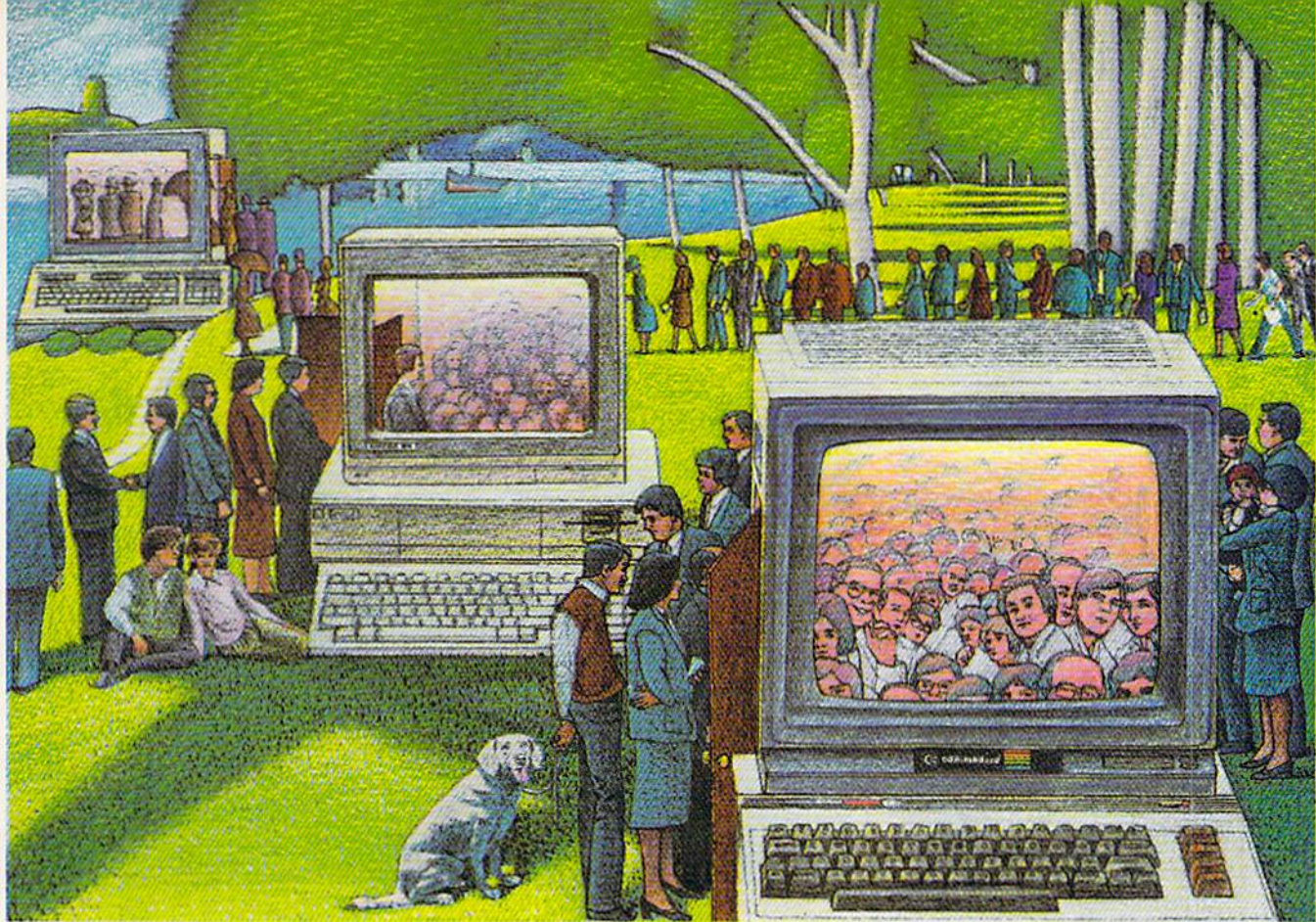
But you are also free to use plain English. The same command would look like this: ">justification on:lm10." Most users will welcome a choice, since the second way is easier to understand when they return to the file weeks or months later.

Heavy users will appreciate *PaperClip II*'s cursor commands which let you cruise the text quickly regardless of the size of the file. If you want to rise to the top of the text in a hurry, simply press the CTRL key followed with the CRSR up key and the text will blur as it rushes down. The reverse command causes the text to leap up the screen. Because *PaperClip II* can hold a text file up to 499 lines long when the 80-column display is used (40-column display allows 999 lines), these fast cursor commands make moving text from top to bottom effortless.

I'm always interested in the spell-

*Continued on pg. 190*





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# Escape

**Computer:** Commodore 64  
**Publisher:** Bantam Software  
 666 Fifth Avenue  
 New York, NY 10103  
**Medium:** Disk  
**Price:** \$24.95

*Escape* is an adventure game with a twist: Instead of being text-oriented like most, it is an adventure that mixes text, graphics and real-time action with both driving and flight simulators. The result more closely resembles an episode from a cops-and-robbers movie than traditional adventures like *Zork* and *Mindwheel*. And, unlike most adventure games, *Escape* can be completed within an hour.

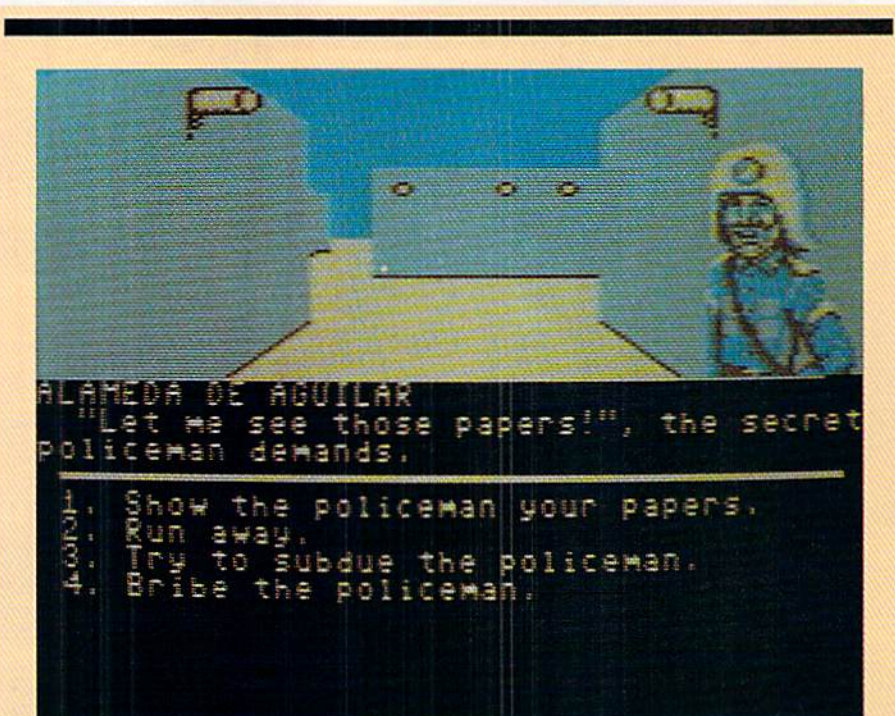
The year is 2035, and you are somewhere in the southwestern area of what was once the United States. Forces have divided the nation into three distinct countries: Turtalia, Dorado and Rebellion. You, a Turtalian, are on a dangerous mission deep inside military-controlled Dorado, where the country's evil dictator is finalizing plans to invade your homeland. Your job is to steal the invasion plans and take them back to Turtalia.

With you are three fellow spies: Zoey, Matt and Fred. Two will help you, but one is an informer for the Doradian secret police. You have no money, no weapons, no identification papers and no safe contacts inside Dorado. Your first obstacle is to locate the invasion plans, the second is to escape with them.

The Doradian village is displayed as a massive three-dimensional labyrinth. Moving around the village gives you a good idea of what a rat must feel like in a maze. As you explore the village's dangerous streets, you will encounter policemen and citizens. Of course, avoid the police (they are looking for you) and if you are surrounded, try to lose them by dodging into the nearest door. If you are lucky, the police will be gone when you exit again.

When you approach citizens, it triggers one of four reactions: they may refuse to talk; they may offer you something useful like money or handcuffs; if they work for the police, they may try to give you something that will help the police detect you; or if they are a thief or mugger, they may try to rob or kill you.

Rather than typing commands to control the game action, as required by most



*This entry-level adventure game more closely resembles an episode from a cops-and-robbers movie.*

adventure games, you control your characters in *Escape* via the joystick. This way there are no legal commands or directional options to remember, the normal cause of frustration for novice adventurers. So if you want your hero to advance, simply press the joystick in the direction you want him to go.

Pressing the firebutton opens doors so you can move to the next street or a room in the village. Young adventurers will like this scheme since it keeps controls simple and fast. But unlike traditional adventure games, you can't check characters to see if they are injured or what they are carrying. Neither can you dump the text to a printer for reference nor ask a character to repeat what they have said. So it is important to pay close attention to what is said and who said it, and note key locations. While you are in the village, the screen displays the street names as you move through the maze. You are wise to make a map to avoid going in circles.

The game makes each episode different by randomly picking the informer and locations to hide the key objects. An

on-screen timer keeps track of how long it takes to complete each phase, so friends can always compete to see who can find the invasion plans faster or who can locate the plane the quickest.

Before you begin *Escape's* dangerous mission, you should spend some time in training. The game is divided into three distinct phases, and you can practice each (town, drive and flight). Practicing inside the town lets you get a look at the village's layout and the kind of characters you will encounter as you search for the secret documents. The same problems, dangers and excitement await you in the practice mode as in the actual adventure. The only difference is that in practice mode you can't advance to the next phase.

The drive simulator has you start just outside the village in a jeep where you search for your escape plane. Your companions will tell you which direction to turn in order to find the plane, but keep in mind that one of your fellow travelers is a Doradian agent who will try to delay your escape. So it is very important to fig-

*Continued on pg. 183*

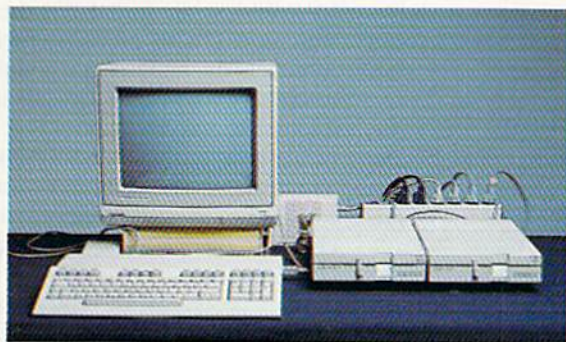


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## Fantastic Animals and Creative Contraptions

**Computer:** Commodore 64  
**Publisher:** Bantam Software  
 666 Fifth Avenue  
 New York, NY 10103  
**Medium:** Disk  
**Price:** \$29.95 each

While educators have debated the merits of different teaching methods, none have argued the importance motivation plays in learning. A motivated child learns. The prerequisite to learning is stimulation. Bantam calls this "constructive play," and both *Fantastic Animals* and *Creative Contraptions* are packed with excitement for even the least motivated child.

### Fantastic Animals

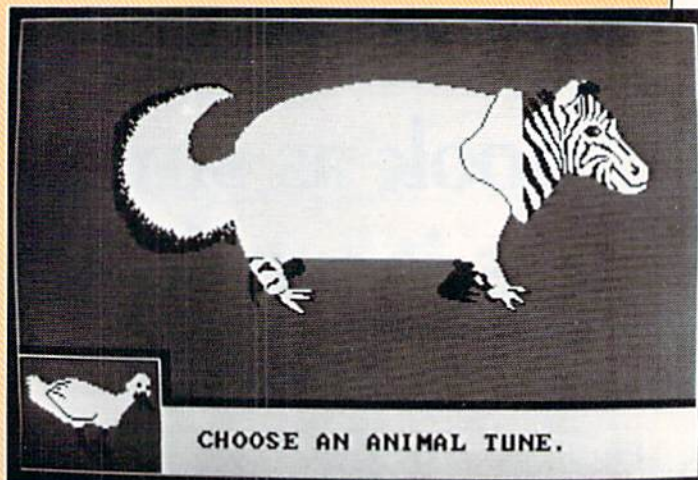
The adjective that first came to mind when I saw a creature from *Fantastic Animals* was "weird." The thing had a duck's head, an elephant's body supported by roadrunner legs, and a zebra's tail. My five year-old thought it was terrific. His teacher knew it was stimulating. Actually, it was all three.

*Fantastic Animals* is a terrifically stimulating but unusual educational program for children ages four to nine. It introduces young children to animals from every spot on the globe. When the child is finished, he or she will know the difference between a duck and a roadrunner, where a gila monster lives, the difference between a lion's and goat's tail, and the fact that reindeer have spots and camels don't.

*Fantastic Animals* has three play modes: Take the Animals Home, Animal Arcade, and Mixed-Up Animals. Each are beautifully illustrated using detailed screen displays. A variety of musical scores accompany each, and the child can pick which tune he or she prefers while the animals perform.

Take the Animals Home teaches the child which animals come from what region of the world. Animal Arcade lets

*Both programs give children a chance to experiment without risk of failure or ridicule.*



children identify parts of different animals. For example, the child might be shown an arctic fox, followed by a parade of different kinds of feet. The child's job is to cycle through the different pairs and pick the correct match.

The real child pleaser and most stimulating option is called Mixed-up Animals. Here the child can freely pick parts from any animal and reassemble them to create a new creature. Then they can select the music they think is appropriate for the fantastic animal's appearance and animate the creature. Believe me, kids can create some pretty strange creatures. The only thing the creatures will have in common is their uniqueness.

### Creative Contraptions

*Creative Contraptions* could be described as a hilarious Rube Goldberg simulator. Rube Goldberg was the genius of contraptions that used things like roller skates, chickens, pulleys, irons, bouncing balls and falling eggs to perform simple chores like combing your hair or waking a sleeping man. This program faithfully creates machines like this. However, each is broken, and it is up to the child to fix it.

The screen shows a machine with lettered parts. On the child's command, a ball is released at the top of the screen which rolls to the part labeled A, then to B, and so on. When a section of the contraption is missing or out of order, the ball can only finish a portion of its course. The child must figure out what part of the puzzle is missing or mispositioned,

and correct it. The bottom screen displays the parts (springs, levers, magnets, pulleys) the child can use to make the repairs.

Different levels of difficulty and a variety of machinery present challenge after challenge for children ages seven and older. An animated tutorial displays properly-working contraptions so the child can learn what makes them work, and then master the game's simple commands without referring to the seven-page manual or command card.

The game teaches cause-and-effect relationships while stimulating the child to experiment with problem-solving. The game lets the child create and play with machinery that would be difficult, if not impossible, to construct for real. But best of all, it forces the child to think a problem through. The child must use deductive reasoning, and will never view it as a chore. To them, *Creative Contraptions* is child's play.

Both programs are entertaining, but more importantly, they make the child think. The programs give children a chance to experiment without risk of failure or ridicule. There are no winners or losers here. Self-competition can be introduced into both games by selecting a timed mode so the child can attempt to improve upon her or his own record time to complete an animal search or contraption puzzle.

The games are simple to control, needing only the cursor, space bar and return keys to activate options. Even my

*Continued on pg. 189*



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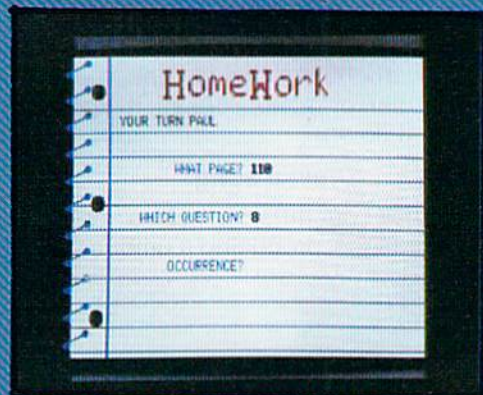
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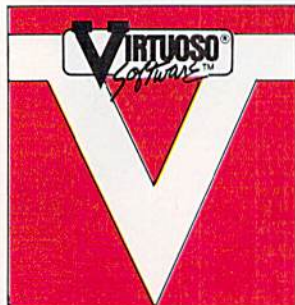
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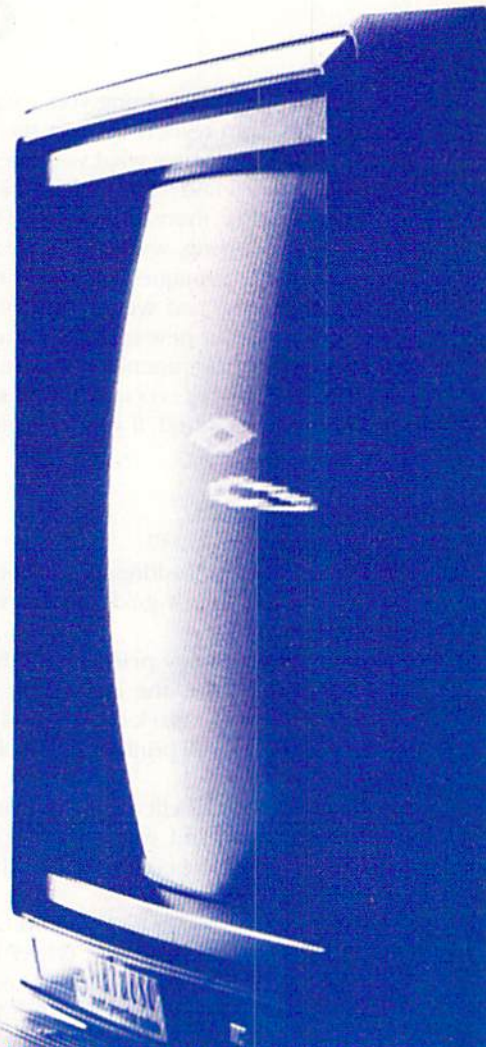
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# Tips & Tricks

## Hints for Fun and Utility

**E**very month, we'll bring you a super collection of computer hints from readers all over the world. Each month in this column, no matter what your area of interest or level of expertise, you'll find something to make your computer life more productive, more interesting or more exciting. To keep the column flowing, we solicit your short programs, useful programming techniques, computer room hints, and similar items of interest, and we pay up to \$40 for the items we select. We look for new or recycled material that can be implemented with a minimum of time, effort and theoretical knowledge, and that is of current value to Commodore computerists of every kind. If you have an item that fills the bill, just sent it to

Louis F. Sander  
P.O. Box 101011  
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you our hint-writer's guide. Readers outside the U.S. may omit the stamp.

**Improved directory printouts:** When you list your directory to the printer, the disk name prints in reverse field (white letters on a black background), which is not too legible on Commodore printers and totally confuses some other printers.

The reverse field effect can be eliminated by a simple direct mode command, executed after the directory has been loaded. Here are the commands for the various Commodore computers.

C64	POKE 2053,32
C128	GRAPHIC CLR : POKE 7173,32
PET/CBM	POKE 1029,32
PLUS/4 and C16	GRAPHIC CLR : POKE 4101,32
VIC 20 (Unexpanded)	POKE 4101,32
VIC 20 (Expanded)	POKE 4613,32

The poke is to an address five bytes above the start of the BASIC program area, and replaces the reverse field character with a space. On some machines, the previous execution of certain graphics statements causes the start of BASIC to move, so we have included a GRAPHIC CLR to undo the move. In most cases, it can be omitted without any adverse effect.

John Gidusko  
Fern Park, Florida

**TAB errors:** If you get a mysterious ?BAD SUBSCRIPT ERROR in a TAB statement, you have probably put a space between the TAB and the first parenthesis that follows it. The space makes the computer think you want TAB to be the name of an array; if the number in parentheses is greater than 11, you'll get the error.

Taryn Puleo  
New Paltz, New York

**Minimizing telecommunications charges:** If you use QuantumLink or another service, your long distance telephone charges are generally included in the fee you pay for the service. But your local phone charges are another matter. Depending on your own exchange and that of the local access number, your local calls can be free or they can cost you plenty.

Often there are two or more local numbers available for you to call. If you check with your telephone company business office, they can tell you which one will be most economical for you. And if you spend a lot of time on-line, it may even pay you to change to a different category of local service. If your telephone company service representative doesn't know what you're talking about, you should ask to speak with a supervisor.

William F. Sander  
Marietta, Ohio

**Quick Q-Link messages:** Here's a shortcut for posting very brief messages on the QuantumLink message boards. When you're prompted to "enter the subject of the message you would like to send," instead of entering a subject, enter your message. Then press RETURN, and without entering anything else, press F7 to get the menu. Press F1 to send your message to Q-Link, and see how quickly it gets sent.

Lucy S. Terrier  
Alton, Illinois

**Home-made disk envelopes:** If you've lost a disk envelope and are looking for a serviceable replacement, you can make one up yourself. Cut a blank piece of typing paper in half from left to right. Fold up 3 3/4" of one end of the resulting piece, and tape both sides of the 3 3/4" overlap. Tain't much, but it works!

Dave Egts  
Johnstown, Pennsylvania



**Two books are better than one:** When you get a programmer's reference guide, don't throw away the user's guide that came with your computer. Use it to look at the charts in the appendices while reading the bigger book.

*James F. Ward, III  
La Grange, Georgia*

**Sheet music:** Not all sheet music is suitable for conversion to computer music. Two kinds that I've found eminently usable are big note music and fake books. Both are generally available where pianos and organs are sold, and both contain simple versions of popular and familiar melodies.

The big note music is for beginning pianists and organists, and contains lots of additional notation which is useful for computer musicians as well. One popular series is *E-Z Play Today* from Hal Leonard Publishing company. Books in the series are priced at \$3.95 and up.

Fake books contain simple versions of hundreds of popular songs. Usually they are huge, and usually they sell for over \$25. One fake book and a Commodore computer should be good for many years of musical enjoyment.

*Jean Patterson  
Pittsburgh, Pennsylvania*

**Screen photography:** Here are some tips to use when making pictures of your computer screen. I get good results with Ektachrome™ color slide film (ASA 64 or 100) in a tripod-mounted 35mm single lens reflex camera. I darken the room enough to eliminate reflections on the screen, and I aim for a 1/2 second exposure. Since a slight underexposure produces sharper text, I select an f-stop a half step above the one indicated by my built-in exposure meter, using a manual exposure override if necessary. (He sent along some slides and they really look good! - LFS).

*Steve Haber  
Manitoba, Canada*

**Emergency ribbon replacement:** If your last printer ribbon gives up the ghost and can't be immediately replaced, you can be back in business in seconds. Remove the paper from your printer and replace it with two sheets separated by a sheet of carbon paper. Nothing will print on the top sheet, of course, but if you've set your impression correctly, the carbon copy should be perfectly legible.

*Dale Blake  
Whiteman AFB, Missouri*

**Easy Script and Drive 9:** When I installed a high-capacity SFD-1001 as drive 9, I looked forward to using it for my **Easy Script** files. The manual doesn't say how to use **Easy Script** with any drive but 8, but believe it or not, other drives are easily accommodated.

When **Easy Script** first loads, just type a 9 instead of a D at the TAPE OR DISK? prompt. All further operations will default to drive 9. To return to drive 8, simply hit RUN/STOP and RESTORE, then type D instead of 9 at the prompt.

*Steve Fishwick  
Hamilton, Ohio*

**Disk head unsticker:** Sometimes when working with copy-protected disks that use tracks above track 35, the disk head gets stuck up there and all further attempts to use the disk drive fail, even after turning the disk drive off and on. The easiest way to return the drive to normal is to initialize it by

entering OPEN 15,8,15,"I0" : CLOSE 15. The disk head will knock one time, then everything should work properly.

*Ed Haymore  
Sunnyvale, California*

**Machine-language saver in BASIC:** This will save a machine-language program, or any other range of memory, to a disk in drive 8. It's tested on the C64, but should work on any Commodore machine. If you try it on the C128, you may have to add some BANK statements.

The routine can be used as a stand-alone program or as a subroutine. If you use it in another program, you can replace the INPUT statements with others to specify the addresses and file name.

Used with a long BASIC program that pokes machine language into place, this routine can make a quick-loading version of the machine-language program. I've also used it to save text and high-resolution screens for quick reloading from disk.

When you type it in, don't overlook the semicolons at the end of lines 180 and 190.

*Robert Bixby  
Kalamazoo, Missouri*

#### ML Saver

```
100 PRINT "[CLEAR] ML SAVER - ROBERT  
BIXBY"  
110 PRINT "[DOWN] THIS SAVES ML TO  
DISK"  
120 INPUT "[DOWN] START ADDRESS"; A  
130 INPUT "[SPACE2] END ADDRESS"; B  
140 A1=INT(A/256): A2=A-256*A1  
150 INPUT "[SPACE5] FILENAME"; E$  
160 OPEN 15,8,15,"S0:"+E$  
170 OPEN 1,8,1,"0:"+E$+"P,W"  
180 PRINT#1,CHR$(A2)CHR$(A1);  
190 FOR J=A TO B:PRINT#1,  
CHR$(PEEK(J));  
200 NEXT  
210 CLOSE 1:VERIFY E$,8,1  
220 INPUT#15,A$,B$:PRINT A$,B$  
:CLOSE 15  
230 END
```

**C64 Wedge defaulter:** You'll like this one if you use the C64's DOS 5.1 wedge program on a computer with a reset button. Under normal circumstances, every time you use the reset button you must reactivate DOS 5.1 by doing a SYS 52224. Then, to re-establish drive 8 as the default device, you must enter @ #8 or POKE 186,8.

The accompanying program alters your wedge to make that second step unnecessary. Type it in and save it immediately, since it self-destructs when run. To use the program, load it and put a disk containing DOS 5.1 in drive 8. When you run the program, it will load DOS 5.1, make the necessary changes, then save the changed program as DOS 5.1D (D for default).

Whenever you use DOS 5.1D, SYS 52224 will not only activate the program, but will also set the default device to drive 8. (The default device number is determined by the second data item in line 50. You can change it if you'd like.)

*Frank Biondi  
Pittsburgh, Pennsylvania*



# Tips & Tricks

## Wedge Defaulter

```

10 PRINT"[CLEAR]WEDGE DEFAULTER-FRANK
   BIONDI"
20 A=A+1:IF A=1 THEN LOAD"DOS 5.1",8,
   1
30 POKE 52225,89:POKE 52226,207
40 FOR J=53081 TO 53087:READ K
   :POKE J,K:NEXT
50 DATA 169,008,133,186,076,225,
   204
60 POKE 43,0:POKE 44,204
70 POKE 45,96:POKE 46,207
80 SAVE"DOS 5.1D",8:SYS 64738

```

**C64 program chainer:** For those who have wished for a simple way to combine two or more programs into one, this program will do the trick. Type it in and save it immediately, since it self-destructs when run. After you run it, load your first program, type SYS 700 and press RETURN. Then load your second program. If you want to chain more together, enter SYS 700 again after loading each one.

When you've loaded the last program, enter SYS 723, and you'll see the combined programs in memory as one long one, even if some of them have duplicated line numbers. If there are duplications, however, or if the numbers run any way but from low to high, you'll have problems when you try to run or edit the combined programs. (If you watch the results of your editing attempts in this case, you can learn a lot about how BASIC performs its various editing tasks.)

You can avoid problems by renumbering the component programs before you combine them. Usually, it's all right to do this while they are in memory, before you execute your SYS 700. When renumbering, make sure the lowest number in each program is greater than the highest number in the preceding one.

*David L. Prestemon  
Derwood, Maryland*

## Chainer 64

```

100 PRINT"[CLEAR]CHAINER 64 - D.L.
   PRESTEMON"
110 PRINT"[DOWN]TO CHAIN PROGRAMS
   TOGETHER:"

```

```

120 PRINT"[DOWN]1. LOAD OR TYPE THE
   FIRST"
130 PRINT"2. ENTER SYS 700"
140 PRINT"3. LOAD OR TYPE THE NEXT
   ONE"
150 PRINT"4. REPEAT 2 & 3 AS
   DESIRED"
160 PRINT"5. WHEN DONE, ENTER SYS 723
   [DOWN]"
170 FOR J=700 TO 731:READ K:POKE J,K
   :NEXT
180 DATA 160,000,230,043,208,002,230,
   044
190 DATA 177,043,208,246,230,043,208,
   002
200 DATA 230,044,177,043,208,236,096,
   169
210 DATA 001,133,043,169,008,133,044,
   096
220 NEW

```

**Multicolor character tip:** If, because of an error or crash, you find yourself in the C64's multicolor character mode, it may be very difficult to read what you type on the screen. If you change the character color to one of the first eight colors, what you type will be perfectly legible. Use CTRL and a number from one to eight, selecting a color that contrasts with your screen color. White or black are almost always good.

*Victor H. Pitre  
Castle Shannon, Pennsylvania*

**C64 to C128 conversion:** Many BASIC programs written for the C64 will run as is on the C128 in 128 mode. Sound and screen pokes are in the same locations in both machines. Only programs with sprites, machine language or lots of peeks and pokes will not run on both machines. So if you don't know whether a program will run in 128 mode, give it a try. You have everything to gain and nothing to lose.

*Jay Machielse  
Grand Blanc, Michigan*



**C128 sprites to C64:** Here is a procedure that will let you use the C128's powerful SPRDEF system to design sprites for the C64. First, enter the sprite editor using the SPRDEF command, and respond to the sprite number prompt with a 1. Next design your sprite and save it using shifted RETURN. Then press RETURN to exit the sprite editor.

Type MONITOR and press RETURN, and when you get the Monitor prompt, enter this command: T FOE00 FOE40 OC000. While still in the monitor, enter G FFF4D. This will put you in C64 mode, where your sprite will be in memory locations 49152-49215. You can use peeks and pokes to move it to the cassette buffer or other suitable location.

*Robert Elzinga  
Fairport, New York*

**C128 and S'More:** If you use Cardco's S'more cartridge with your C128, you may be frustrated because the computer doesn't automatically enter 64 mode when it's turned on. And if you enter 64 mode by using the GO 64 command, the cartridge still won't start up properly.

The solution is to enter 64 mode by holding down the Commodore key at power up, or by holding it down and pressing the reset button.

*David Schreiber  
San Jose, California*

**C128 reset button extender:** My fingers are large, and I find the tiny reset button almost impossible to use, even with my pinky. So I took a 3/4-inch piece of Radio Shack shrink tubing, slid it over the button, and used my wife's hair dryer to heat it for about ten seconds. This was long enough to shrink the tubing over the button, and left about 3/8 of an inch of tubing exposed. Now I can reset the computer with my index finger.

*Walt Grosch, KZ9F  
Milwaukee, Wisconsin*

**C128 monitor and resets:** It doesn't say so in the manual, but when resetting the C128 you can go directly to the monitor simply by holding down the RUN/STOP key as you press the reset button.

You can use this if your BASIC program crashes in a seemingly unrecoverable way. To recover harmlessly from the crash, press RUN/STOP and push the reset button. When the Monitor prompt appears, type an X and press RETURN. The machine will return to BASIC with your program still intact.

*Anna Mae Hertzler  
Boynton Beach, Florida*

**C128 monitor printouts:** The built-in monitor is a great help to those who dabble in machine language, but it lacks any commands to redirect its output to the printer. Nevertheless, doing so is simple and foolproof, and here's the complete procedure. In direct mode, enter OPEN 4,4 : CMD4 : MONITOR. When you press RETURN, you will be in the monitor, and all output will go to the printer. To discontinue printing, just enter X and press RETURN. You'll instantly go back to BASIC, with the printer completely off-line.

*George A. Gilbert  
Philadelphia, Pennsylvania*

**RGB monitor extension:** The Radio Shack #276-1978 ten-foot joystick extension cable works perfectly as an extension

for the C128's RGB monitor cable.

*David G. Veatch  
Warren, Mississippi*

**80-column flashing and underlining:** On the C128's 80-column screen, underlining is initiated by printing a CTRL-B or CHR\$(2), and canceled by a CHR\$(130). Similarly, flashing text is started by CTRL-O or CHR\$(15), and stopped by CHR\$(143). The CTRL-B and CTRL-O can be entered within a PRINT statement just by pressing the appropriate key combinations when the cursor is inside quotes. But there aren't any key combinations that will give the CHR\$(130) or CHR\$(143), so turning off these features requires lots of manipulation of the PRINT statements.

If you are using a lot of flashing and underlining, it may pay you to redefine some function keys, like this.

KEY 4, CHR\$(130)

KEY 6, CHR\$(143)

Now, if your cursor is inside quotes, you can cancel the feature by pressing the appropriate function key.

If you really want to get fancy, put CHR\$(2) on KEY 3 and CHR\$(15) on KEY 5. Then you can use the shifted and unshifted function keys to turn the features on and off.

*Eugene L. Pizzetta  
Revere, Massachusetts*

**Pausing C128 graphics:** It's sometimes desirable to pause the creation of a high-resolution graphics screen in mid-program, especially when developing software. Unfortunately, the manual doesn't tell you how to do it, or even if it can be done.

My trick for this is to turn on the trace option (by entering TRON) before running the program. With this option enabled, you can pause the creation of the high-resolution screen simply by pressing the No Scroll key.

*J. C. Vollmer  
Prior Lake, Minnesota*

**Quick escape from C128 graphics:** When your C128 is in one of its graphics modes, you can quickly get back to text mode by pressing the STOP key, then any letter key and RETURN. The text screen will pop up with a harmless SYNTAX ERROR.

*Stan Smith  
Gladwin, Mississippi*

**Watch those abbreviations!** One drawback to the C128's BASIC is that some of the keyword abbreviations have been changed. Programmers who have used "P shift O" as an abbreviation for POKE will be surprised at the error message returned in direct mode or at the appearance of the keyword POT in their program listings. Other abbreviations have changed as well, and here's a partial list:

Keyword	64 Abbr.	Gives in 128	128 Abbr.
PEEK	pE	PEN	peE
POKE	pO	POT	poK
READ	rE	RECORD	reA
STOP	sT	STASH	stO
CONT	cO	CONCAT	None
END	eN	ENVELOPE	None
SPC	sP	SPRITE	None

*Charles Lavin  
Coral Gables, Florida*



# Phone Messages for the Commodore 64 and 128 With a 1526 Printer

**P**hone Messages is a short program that prints out a form for recording phone messages. Four messages can be recorded on each sheet, and there's enough room on the sides for holes to be punched for a three-ringed binder.

Each form has space for the time the call was taken, the date the call was taken, who the message is for, from whom the call came, the message itself, and who took the call.

Phone Messages was designed for use with the Commodore 1526 printer. If you are using a different printer, you may need to change the secondary address and chr\$ to make the program work on your printer (consult your printer manual).

C

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

## Phone Messages

```
1 PRINT"[CLEAR,RVS,WHITE,RVOFF]"
:POKE 53280,1:POKE 53281,9'DQNF
10 PRINT"[DOWN2,SPACE2,RIGHT11]"
PHONE MESSAGES" 'BAGD
100 PRINT'BACU
110 PRINT"[DOWN2,RIGHT2]"
PLEASE TURN ON PRINTER" 'BASD
120 PRINT"[DOWN2,RIGHT2]PRESS ([^]"
) AND RETURN TO START PROGRAM."
:INPUT DS$'CEFJ
130 IF DS$="[^]" GOTO 150'DGRB
135 IF DS$<>"[^]"GOTO 140'EGNH
140 PRINT"[DOWN2,RIGHT2]PRESS [^]"
TO START":GOTO 120'CELF
150 OPEN 4,4,0'BFRB
152 FOR X=1 TO 4'DDWE
155 PRINT#4,CHR$(147)'CHVH
160 PRINT#4,'BCWB
165 PRINT#4,SPC(10)"TIME"
:-----"SPC(5)"DATE"
:-----"'DHOS
168 PRINT#4,'BCWJ
170 PRINT#4,SPC(10)"FOR"
:-----
:-----"'CFBO
175 PRINT#4,'BCWH
180 PRINT#4,SPC(10)"FROM"
:-----
:-----"'CFIP
183 PRINT#4,'BCWG
185 PRINT#4,SPC(10)"MESSAGE"
:-----
:-----"'CFHU
187 PRINT#4,'BCWK
190 PRINT#4,SPC(10);"-----"
:-----
:-----"'CGLP
```



*Abolish those little scraps of  
paper once and for all.*

```
193 PRINT#4,'BCWH
195 PRINT#4,SPC(10)"CALL TAKEN BY"
:-----
:-----"'CFRV
210 PRINT#4,SPC(10)"*****"
*****"
***"'CFPI
220 PRINT#4,'BCWX
230 NEXT:'BBMY
232 PRINT#4,CHR$(13)'CGPD
235 CLOSE 4,4,0'BFSF
240 PRINT"[DOWN2,RIGHT2]"
PRESS C TO CONTINUE OR E TO EXIT."
:INPUT RE$'CEYL
250 IF RE$="C"GOTO 1'DEUD
260 IF RE$<>"C"GOTO 270'EGQG
270 IF RE$="E"GOTO 290'DGWW
280 IF RE$<>"E"GOTO 240'EGPI
290 END'BACF
```

END



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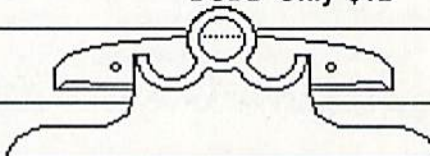
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# Modem Answering Machine

*for the Commodore 64 and 1650 Modem (or equivalent)*

**H**ave you ever wondered what your computer can do when you're not using it? I have—and here's one application you might like to try. It's a variation on a telephone answering machine, except that it handles messages between computers instead of people. I call it Modem Answering Machine.

When you're not at home or unavailable to answer the phone, just boot up this program and it will log any messages left by another computer via your modem. It was essentially written by my 15 year-old son with a little help from me to smooth the rough edges.

The three options of the program are to create your message to the caller, read messages left by callers, and print messages left by callers. I suggest that you keep a back-up copy of the program safely tucked away somewhere and put a copy on your message (and otherwise clean) disk. This way, you'll have room for over 140 messages, since most messages will probably be no more than one block in length. After you have logged in several messages and read some, you will probably want to scratch some of the old messages.

First create your message to the callers. Select the appropriate option from the main menu (F1) and type what you'd like the caller to see when your modem answers the phone. Typing an up-arrow signals the end of your message, which will be written on the disk as a sequential file. Now just follow the main menu and prepare the modem as instructed.

When somebody calls, they'll be prompted what to do, including a request for their name. They will then receive your message. They will be instructed to type in their message to you, ending with the up-arrow key. The program will write the message to the disk coded with the current message number, and the call will be terminated.

## Finally—an answering machine for your computer.

Anyone who calls without a modem will hear the carrier signal and know that they aren't talking to a person. When they hang up, the program will rest a bit, then resume the auto-answer mode. This will definitely be a deterrent to those telephone solicitors!


The other options are the read and print options. You can do either or both. If you're forgetful, you'll want hardcopies of certain messages as reminders.

There is only one operating quirk. The program keeps track of how many messages have been left by using location 251 as a counter. When the machine is turned on, this location contains a zero. If you want to keep using the disk without scratching the messages, you'll need to update this location every time you set up the system.

Don't worry, though, it's easy. Before you run the program, just POKE 251 with the number of the next message that will be recorded by the program. If the largest message number on the disk is six, then simple POKE 251,7 [RETURN] before you run the program, and the maintenance is done. If, on the other hand, you want to start off with a clean message base every time you use it, be sure you have scratched all messages (except your message) before you start. Aside from that, the program should give you no trouble.

The most difficult task we had to do was to get the modem to answer the phone and hang up properly. It took a lot of testing and head-scratching, but we eventually figured out how to use the RS-232 registers properly. After getting over that hurdle, the only problems we ran up against were the normal ones like getting the files to write/read/print properly.

I hope you like Modem Answering Machine and get some mileage out of it. It's written from a programming standpoint, so if you want to customize it to do something else, it shouldn't be too difficult.

But most of all, have fun. And remember, at the sound of the tone, leave your message and I'll get back to you. 

Before typing these programs, read "How to Enter Programs," and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

### Modem Answering Machine

```
100 IF PEEK(251)<1 THEN POKE 251,
    0'FLAA
110 POKE 53281,16:POKE 53280,16
    :PRINT CHR$(14):MN$="1"FBQE
120 PRINT"[CLEAR,GRAY3,SPACE7,SHFT M]
    ODEM [SHFT A]NSWER [SHFT M]
    ACHINE 1985"BAWH
130 PRINT"[SPACE7,L. RED,CMDR T25]
    "'BAUQ
140 PRINT"[SPACE7,L. BLUE] [SHFT B]Y
    : [SHFT D]ON & [SHFT D]ARRYN
    [SHFT G]RAHAM":PRINT"[DOWN2,GRAY3]
    [SHFT M]AIL ->";PEEK(251)'DHMO
150 PRINT"[DOWN2,GREEN] [SHFT P]
    LACE YOUR '[SHFT T]-[SHFT D]
```

```
' SWITCH TO '[SHFT D]' AND HIT
[SPACE2] [[SHFT R]ETURN]
TO ENTER ":'BBKS
160 PRINT"[SHFT A]NSWER MODE- "
:PRINT" [[SHFT F]1]
    TO WRITE MSG- "'CBXL
165 PRINT" [[SHFT F]3] TO [SHFT R]
    EAD [SHFT M]ESSAGES"'BARN
170 PRINT" [[SHFT F]5] TO PRINT
    MESSAGES"'BACJ
180 GET ZX$:IF ZX$=CHR$(13) THEN
    230'FOXJ
190 IF ZX$="[F1]"THEN 700'DGOH
200 IF ZX$="[F3]"THEN 640'DGSY
210 IF ZX$="[F5]"THEN 750'DGVA
220 GOTO 180'BDIY
230 OPEN 5,2,2,CHR$(6)'CJCK
240 PRINT"[CLEAR,GRAY3,SPACE7,SHFT M]
    ODEM [SHFT A]NSWER [SHFT M]
```





# VISIT EXOTIC LANDS AND WIN OVER THE NATIVES.

There is a place, probably a long, long way from where you're sitting right now, where grown men actually wear dresses and throw telephone poles in the air as a sign of athletic prowess.

It is true.

There is another rather bizarre land where grown men actually throw *themselves* in the air as a sign of athletic prowess.

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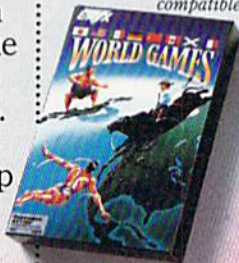
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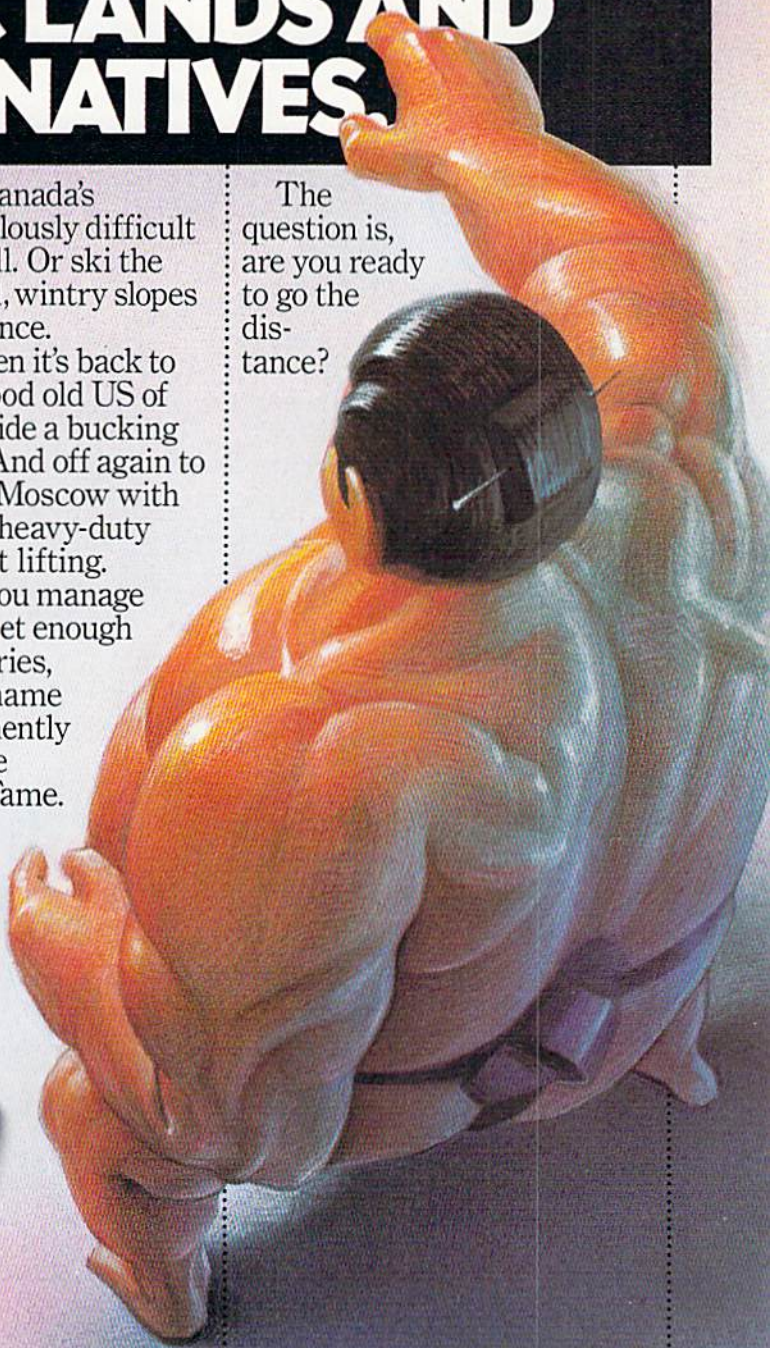
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compatibles, Atari ST,  
C64/128, IBM &  
compatibles.



The question is, are you ready to go the distance?





# 

```

ACHINE 1985"BAWK
250 PRINT"[SPACE7,L. RED,CMDR T25]
    "BAUT
260 PRINT"[SPACE7,L. BLUE] [SHFT B]Y
    : [SHFT D]ON & [SHFT D]ARRYN
    [SHFT G]RAHAM":PRINT"[DOWN2,
    L. BLUE,SHFT M]AIL -->";
    PEEK(251)'DHAR
270 PRINT"[DOWN2,L. RED,SPACE4,SHFT S]
    YSTEM [SHFT W]AITING FOR A
    [SHFT C]ALLER..."BAWO
280 POKE 56579,38'BILG
290 WAIT 56577,8,8'BJDH
300 POKE 56577,PEEK(56577)OR 32'DPHC
310 PRINT"[GREEN,SPACE4,DOWN,SHFT C]
    ALLER [SHFT A]TTEMPTING TO
    [SHFT C]ONNECT"BAHI
320 WAIT 56577,16,24'BLVB
330 PRINT"[CLEAR,DOWN3,GRAY3,SHFT C]
    ARRIER [SHFT O]NLINE... WAITING
    FOR [[SHFT C,SHFT R]]"BAFN
340 FOR I=1 TO 2000:NEXT
    :M$="[SHFT C]HOOSE [SHFT H]ALF
    [SHFT D]UPLEX-- [SHFT H]IT [
    [SHFT R]ETURN":GOSUB 740'GOET
350 CT=CT+1'CFLE
360 GET#5,A$:IF A$<>CHR$(13)THEN IF
    CT<2000 THEN 350'JVRN
370 IF A$=CHR$(13)THEN M$="[DOWN,
    SHFT M]ODEM [SHFT A]NSWER [SHFT M]
    ACHINE":GOSUB 740:GOTO 400'HQIS
380 PRINT"TIME IS UP, NOBODY WAS
    THERE"BAAN
390 POKE 56577,0:FOR I=1 TO 5000:NEXT
    :GOTO 240'GTBN
400 M$="-----"
    :GOSUB 740:N$="[SHFT Y]OUR
    [SHFT N]AME ->":GOSUB 840'ENOM
410 INPUT#5,NA$'BFBA
420 M$="[SHFT Y]OU ARE "+NA$+"
    [SHFT R]IGHT? (Y/N)"
    :GOSUB 740'EJNK
430 GET#5,ZX$:IF ZX$=CHR$(89)THEN
    460'FRSI
440 IF ZX$=CHR$(78)THEN NA$=""
    :GOTO 400'GOCI
450 GOTO 430'BDGE
460 PRINT"[SHFT O]NLINE ->";NA$
    :M$=CHR$(13)+CHR$(13)+CHR$(13)
    'HTGP
470 M$="-- [SHFT S]TANDBY FOR [SHFT S]
    YSOP'S [SHFT M]ESSAGE --"
    :GOSUB 740'CGQR
480 OPEN 8,8,8,"0:SYSOP MSG,S,R"'BGDL
490 GET#8,A$:IF ST<>64 THEN PRINT#5,
    A$;:PRINT A$;:GOTO 490'IXRQ
500 M$=CHR$(13)+"-- [SHFT E]ND OF
    [SHFT M]ESSAGE --":GOSUB 740
    :CLOSE 8'FMNK
510 M$=CHR$(13)+CHR$(13)+CHR$(13)
    :GOSUB 740'HSBI
520 GOTO 550'BDJC
530 M$=CHR$(13)+CHR$(13)+"[SHFT T]
    HANKS FOR CALLING..."
    :GOSUB 740'GOPO
540 POKE 56577,0:FOR I=1 TO 5000:NEXT
    :GOTO 240'GTBK
550 M$="<-- [SHFT M]ESSAGE FOR
    [SHFT S]YSOP -->":MN$=STR$(PEEK
    (251)):GOSUB 740'FRKS
560 M$="[SHFT T]YPE '[UP ARROW]
    ' TO END...":GOSUB 740'CGIM
570 OPEN 8,8,8,"0:MAIL "+MN$+",S,
    W"'DJAM
580 PRINT#8,NA$+CHR$(13)'DJMK
590 GET#5,A$:IF A$=""THEN 590'ELUM
600 IF A$<>[UP ARROW]THEN PRINT A$;
    :PRINT#8,A$;:GOTO 590'HPBH
610 PRINT#8'BBHB
620 PRINT#5,"[SHFT S]AVING":CLOSE 8
    :M$="[SHFT T]HANKS FOR YOUR
    COMMENTS."DHMP
625 POKE 251,PEEK(251)+1'DKYK
630 GOSUB 740:GOTO 530'CHFF
640 PRINT"[CLEAR,SHFT M]
    AIL NUMBER TO READ...>":INPUT CN
    :MN$=STR$(CN)'EMLQ
650 OPEN 8,8,8,"0:MAIL "+MN$+",S,
    R"'DJUL
660 GET#8,A$:IF ST<>64 THEN PRINT A$;
    :GOTO 660'HRGO
670 CLOSE 8:PRINT"[DOWN2] [SHFT H]IT
    [SHFT S]PACE."CCXM
680 GET ZX$:IF ZX$<>" THEN 680'FKSN
690 GOTO 120'BDCK
700 PRINT"[CLEAR] [SHFT B]EGIN
    [SHFT N]OW":PRINT"[SHFT H]IT '
    [UP ARROW]' TO END..."CBOL
710 OPEN 8,8,8,"0:SYSOP MSG,S,W"'BGIH
720 GET A$:IF A$<>[UP ARROW]
    THEN PRINT A$;:PRINT#8,A$;
    :GOTO 720'ISEM
730 PRINT#8:CLOSE 8:GOTO 120'DHFH
740 PRINT#5,M$:PRINT M$:RETURN'DIRI
750 REM ** PRINTER ROUTINE **'BSDL
760 PRINT"[CLEAR,DOWN2,L. RED]
    [SHFT P]RINT [SHFT M]AIL TO
    [SHFT P]RINTER."BAHQ
770 PRINT"[DOWN,L. BLUE] [SHFT E]
    NTER [SHFT M]AIL# TO PRINT ->";
    :INPUT E:ES$=STR$(E)'EKBU
780 IF E>PEEK(251)THEN 760'EJLN
790 OPEN 4,4,7:OPEN 8,8,8,"0
    :MAIL "+ES$+",S,R":PRINT#4,
    CHR$(17)'GWRV
800 GET#8,A$:IF ST<>64 THEN PRINT#4,
    A$;:GOTO 800'HTVK
810 CLOSE 8:PRINT#4:CLOSE 4
    :PRINT"[DOWN2] [SHFT H]IT [SHFT S]
    PACE."EGSK
820 GET ZX$:IF ZX$<>" THEN 820'FKOJ
830 GOTO 120'BDCK
840 PRINT#5,N$;:PRINT N$;:RETURN'DKMJ

```

END



# Introducing ActionSoft!

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Colonel Jack Rosenow, President of ActionSoft Corporation, is out to turn the simulation software industry upside down:

"Most current simulations are little more than games," says the Colonel. "They're a far cry from what can be done with modern state-of-the-art graphics technology. They have limited strategic depth and a limited sense of realism. That's why ActionSoft Corporation was created. We're going to redefine the state of the art in simulation software."

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**Colonel Jack Rosenow, USAF  
(Ret)**



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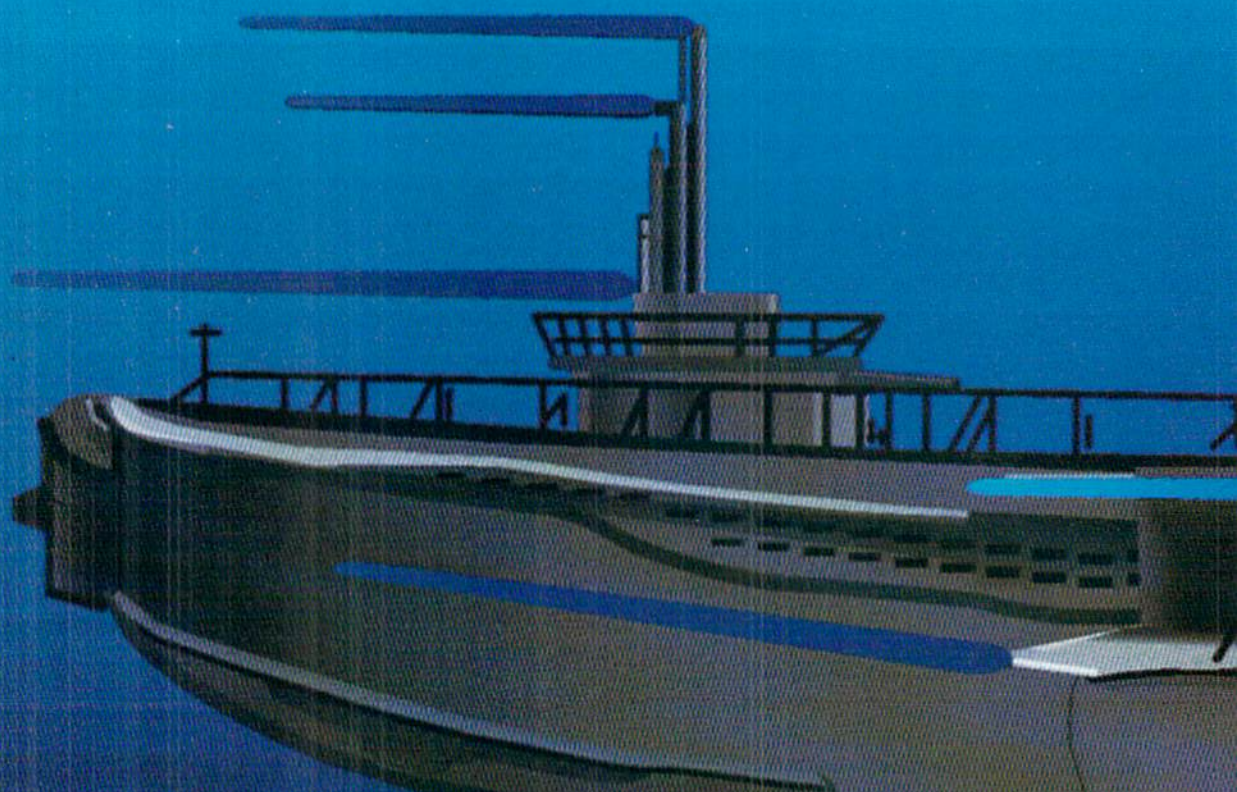
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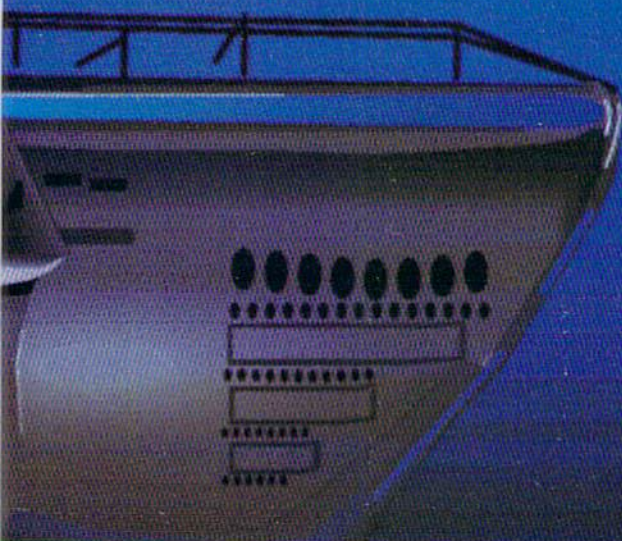
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Captain John Patten, USN (Ret)

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## Easydata-128

The numeric keypad on the 128 is one feature I really love, especially when I'm entering machine-language programs stored in DATA statements. Here's a way to make things even easier.

Easydata-128 redefines the plus key to print "DATA," and changes the minus key to a comma. Of course, you could set function keys to do this, but I'm so lazy I prefer not to stretch my pinkies any further than I absolutely have to.

Now I keep track of my place in the magazine with one hand and leave the other hand nailed to the keypad. Combine this with the AUTO command, and I become a program-entering machine.

Load and run Easydata-128 before you start entering program lines. When you arrive at a chunk of DATA statements, enable it with SYS 6144. Disable it with RUN-STOP/RESTORE.

Now all you have to remember is to take a break once in a while to let your fingers cool!

G



*Redefine keys on the numeric keypad to make entering DATA statements easier.*

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

### Easydata-128

```
1 REM THIS PROGRAM REDEFINES + KEY TO
  PRINT "DATA "; - KEY PRINTS
```

```
COMMA 'BWWO
2 REM ENGAGE WITH SYS6144 - DISENGAGE
  WITH RUN-STOP/RESTORE 'BWJN
10 BANK 15:SUM=0:FOR I=6144 TO 6270
  :READ J:POKE I,J:SUM=SUM+J:NEXT
  :IF SUM<>14034 THEN PRINT"ERROR IN
  DATA":END'QSQV
6144 DATA 120,173,60,3,141,127,24,
  173'BCYM
6152 DATA 61,3,141,128,24,169,25,
  141'BBHL
6160 DATA 60,3,169,24,141,61,3,88'BXUJ
6168 DATA 96,162,9,221,119,24,240,
  68'BBUS
6176 DATA 202,16,248,166,208,236,32,
  10'BDGR
6184 DATA 176,52,201,43,240,7,201,
  45'BBBQ
6192 DATA 240,36,76,88,24,224,5,
  176'BAYP
6200 DATA 37,169,68,157,74,3,232,
  169'BBKF
6208 DATA 65,157,74,3,232,169,84,
  157'BBGN
6216 DATA 74,3,232,169,65,157,74,
  3'BYYM
6224 DATA 232,169,32,76,88,24,169,
  44'BBHL
6232 DATA 157,74,3,232,134,208,169,
  127'BDTK
6240 DATA 141,0,220,96,189,0,16,
  133'BAEJ
6248 DATA 209,169,0,202,48,6,24,
  125'BAKR
6256 DATA 0,16,144,247,133,210,96,
  133'BCEQ
6264 DATA 137,134,138,135,139,136,140,
  0'BEBQ
```

END

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## Pick-Up Blocks

### A Logic Puzzle for the Commodore 64

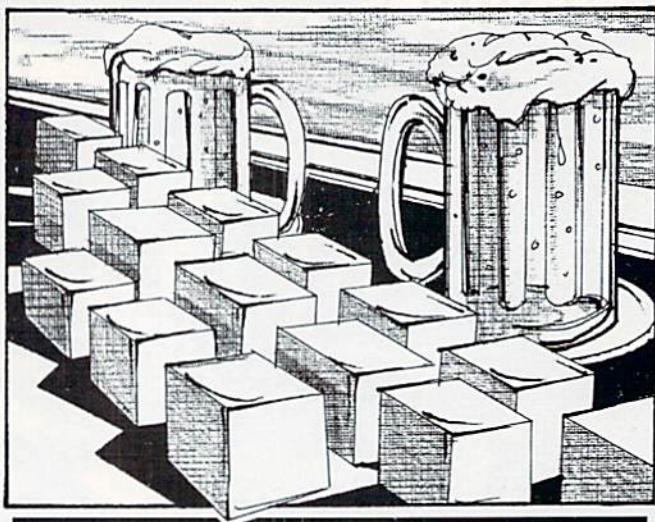
Imagine that you're sitting in your favorite tavern late one night. A stranger walks in and asks if you'd like to play a little game. He produces 15 small blocks from his pocket and arranges them into three rows of three, five, and seven. He tells you that the object of the game is to make your opponent take the last block. On a given turn, you may take as many blocks from one row as you wish, but you must take at least one. He even offers to let you have the first move. It sounds so easy that you agree to bet him a ten-spot on the outcome. If you've studied this program carefully, you'll win!

#### Getting Started

Type in the program as it appears below, then save it. When you run it, a short description of the rules appears. Press any key to start the game, and set up three rows of blocks with three in row one, five in row two, and seven in row three. You move by selecting a row, then the number of blocks you wish to take from that row. Finally, confirm your choice with the letter Y. The letter allows you to change your move.

For example, suppose you wish to take two blocks from row three. Enter 3 [Return], 2 [Return], Y [Return]. The screen will make the change. If your move was impossible (trying not to take any blocks, or trying to take more blocks than there are in a row), the program will ask you for a different move.

Now it's the computer's turn. Based on your last move, it generates a move based on the strategy in lines 115-235 of the program. The screen records the computer's choice by



*Figure out how to force the computer to pick up the last block.*

removing the appropriate block(s), and waits for your move. The sequence continues until either you or the computer picks up the last block and loses. At the end of the game, a short tune is played for the winner, so be sure the sound knob on your monitor is turned up.

Once you understand the game, you can win every time if you move first. But it takes most people quite a while to be able to beat the computer consistently. Some people never figure it out. If you give up trying to beat the computer, and can't decipher the strategy in the program, send a stamped, self-addressed envelope to me at the Department of Chemistry (172), University of Cincinnati, Cincinnati, OH 45221. I'll send you the winning strategy.

C

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

#### Pick-Up Blocks

```

5 DIM N(3),H(18),L(18),D(18)
  :FOR N=0 TO 16 :READ H(N), L(N),
    D(N) :NEXT GSWP
10 POKE 53280, 6 : POKE 53281, 12
  : A = 54272 : POKE A+24, 15'FFQG
15 N(1) = 3 : N(2) = 5 : N(3) = 7
  : GOSUB 300'EVUI
20 PRINT "[DOWN]THE OBJECT OF THIS
  GAME IS TO FORCE" : PRINT'CBPI
25 PRINT "ME TO TAKE THE LAST
  REMAINING" : PRINT'CBTM
30 PRINT "BLOCK.[SPACE2]
  ON A GIVEN TURN YOU MAY TAKE"
  : PRINT'CBBJ
35 PRINT "AS MANY BLOCKS [RVS]
  FROM ONE ROW [RVOFF] AS YOU "
  : PRINT'CBNP
40 PRINT "WISH, BUT YOU MUST TAKE AT

```

```

  LEAST ONE." : PRINT'CBSL
45 PRINT "CAN YOU FIGURE OUT THE
  TRICK?" : PRINT'CBXO
50 PRINT "WHEN YOU'RE READY,
  PRESS ANY KEY." : PRINT'BAKK
55 GET AS$ : IF AS$ = "" THEN 55'EHRJ
60 GOSUB 300'BDGD
65 INPUT "YOUR MOVE! [SPACE2]
  WHICH ROW ";I : IF I > 3 THEN
  60'EHBQ
70 INPUT "TAKE HOW MANY";J
  : IF J > N(I) THEN 60'EKGL
75 IF J = 0 THEN 60'DEUK
80 INPUT "ARE YOU SURE (Y/N)";ANS$
  : IF ANS$ = "" THEN 80'EKKN
85 N(I) = N(I) - J'CJSM
90 IF (N(1) <> 0) OR (N(2) <> 0) OR
  (N(3) <> 0) THEN 115'KYYQ
95 PRINT "[CLEAR,DOWN8,RIGHT7]AHA!
  [SPACE2]GOTCHA!" : PRINT'BANP
100 GOSUB 350'BDLV
105 PRINT : PRINT : INPUT "PLAY AGAIN
  (Y/N)"; ANS$ : IF ANS$ = "Y" THEN

```

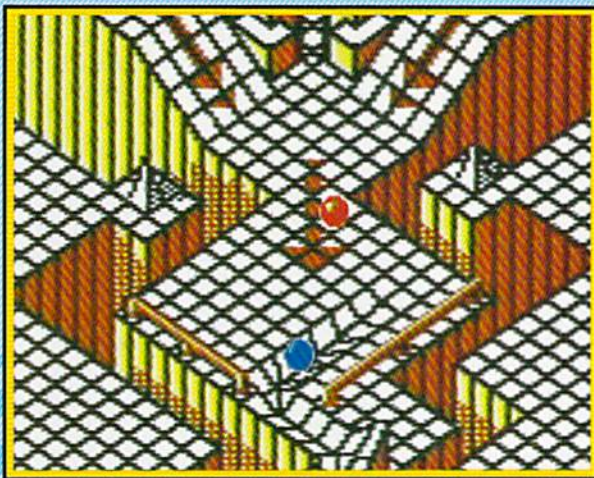


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Marbles...

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The game that drove you crazy at the arcades now comes home. Same exciting gameplay, same blow-away graphics, sounds and music. We've even added an incredible all-new secret level.



A unique game experience that's crazy fun for everyone. Two players race to the goal line, or one player races against the clock. It's sports competition, kinetics and strategy.

## Ultimate Competition for 1 or 2 players.

The object is simple. Race your marble to the goal line, and don't let anything get in your way. It sounds easy, but it just might drive you nuts.



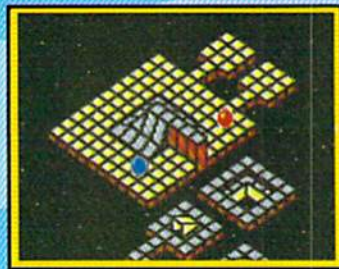
### Spectacular Animation

Fantastic 3-D terrains are the raceways. Zany (but dangerous) enemies await your every turn. Avoid the deadly steelies and the pounding hammers. Watch out for the hungry marble munchers. Even surf a mechanical wave!



### Secret Level

If you can find it, just wait till you try to get through it!



### Incredible Madness

Marble Madness, the ultimate in exciting non-stop action. Each level has its own "personality" and creatures to contend with, as well as its own original music score. It's not easy being a marble - make it to the Ultimate Level and you'll know why.



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# JIFFIES/PICK UP BLOCKS

```

15'GMFK
110 END'BAV
115 GOSUB 300 : PRINT "MY MOVE"
: L = 0 : S = 7 : M = 0
: H = 0'GQK
120 FOR I = 1 TO 3 : IF N(I) < S THEN
S = N(I) : L = I'IRAG
125 NEXT'BAEC
130 FOR I = 1 TO 3 : IF N(I) > S THEN
S = N(I) : H = I'IRTH
135 NEXT : IF H = 0 THEN H = 3
: M = 2 : GOTO 155'HMOK
140 T = N(1) + N(2) + N(3) - N(L) -
N(H)'FVTG
145 FOR I = 1 TO 3 : IF (N(I) = T)
AND (I<>H) AND (I<>L) THEN M =
I'NVAR
150 NEXT'BAEA
155 IF N(L) = 1 THEN 185'DIHI
160 IF N(L) = 0 THEN 210'DIUE
165 IF N(M) = N(H) THEN N(L) = 0
: GOTO 230'FRTM
170 IF N(L) = N(M) THEN N(H) = 0
: GOTO 255'FRBI
175 IF (N(L) = 2) AND (N(M) = 3) THEN
N(H) = 1 : GOTO 230'HXSQ
180 N(L) = N(L) - 1 : GOTO 230'DNMH
185 IF (N(M) = 1) AND (N(H) > 1) THEN

```

```

N(H) = 1 : GOTO 230'HXKR
190 IF N(M) = N(H) THEN N(L) = 0
: GOTO 230'FRTK
195 IF (N(M) = 2) AND (N(H) > 3) THEN
N(H) = 3 : GOTO 230'HXPS
200 IF (N(M) = 3) AND (N(H) >= 3)
THEN N(H) = 2 : GOTO 230'IXSF
205 N(M) = N(M) - 1 : GOTO 230'DNOF
210 IF (N(M) = 0) AND (N(H) > 1) THEN
N(H) = 1 : GOTO 230'HXJG
215 IF N(M) = 1 THEN N(H) = 0
: GOTO 255'FOPI
220 IF N(M) <> N(H) THEN N(H) = N(M)
: GOTO 230'GUTG
225 N(M) = N(M) - 1 : GOTO 230'DNOH
230 FOR J = 1 TO 1000 : NEXT'EHGC
235 IF N(H) <> 0 THEN 255'EIWI
240 PRINT"[CLEAR,DOWN8]WELL,
YOU DID IT!"'BAOG
245 PRINT : PRINT "YOU BEAT ME FAIR
AND SQUARE!"'CBEN
250 GOSUB 400 : GOTO 105'CHVD
255 FOR J = 1 TO 1000 : NEXT
: GOTO 60'FKWK
300 PRINT "[GRAY3,CLEAR,DOWN5]"'BAEY
305 FOR I = 1 TO 3 : PRINT I".[RIGHT4]
";'EGAG
310 IF N(I) = 0 THEN 325'DIYB
315 FOR K = 1 TO N(I)'DGIG
320 PRINT "[RVS] [RVOFF,RIGHT]";
: NEXT'CCNB
325 PRINT'BACE
330 PRINT : NEXT : PRINT : PRINT'EDAC
335 RETURN'BAQF
350 POKE A+5, 9 : POKE A+6, 0'EJFG
355 FOR N = 6 TO 16 : POKE A,L(N)
: POKE A+1,H(N) : POKE A+4,
17'IAKR
360 FOR T = 1 TO D(N) : NEXT T'EIDH
365 POKE A+4, 16 : FOR T = 1 TO 10
: NEXT : NEXT'HMIO
370 RETURN'BAQE
400 POKE A+5, 9 : POKE A+6, 0'EJFC
405 FOR N = 0 TO 5 : POKE A,L(N)
: POKE A+1,H(N) : POKE A+4,
33'IYCN
410 FOR T = 1 TO D(N) : NEXT T'EIDD
415 POKE A+4, 32 : FOR T = 1 TO 10
: NEXT : NEXT'HMKG
420 RETURN'BAQA
450 DATA 16,195,64,21,31,64,25,30,
64'BCII
455 DATA 33,135,128,25,30,64,33,135,
128'BFYO
460 DATA 16,195,256,16,195,192,16,195,
64'BGBK
465 DATA 16,195,256,19,239,192,18,209,
64'BGBP
470 DATA 18,209,128,16,195,128,16,195,
128'BHUL
475 DATA 15,210,128,16,195,256'BVYO

```

END



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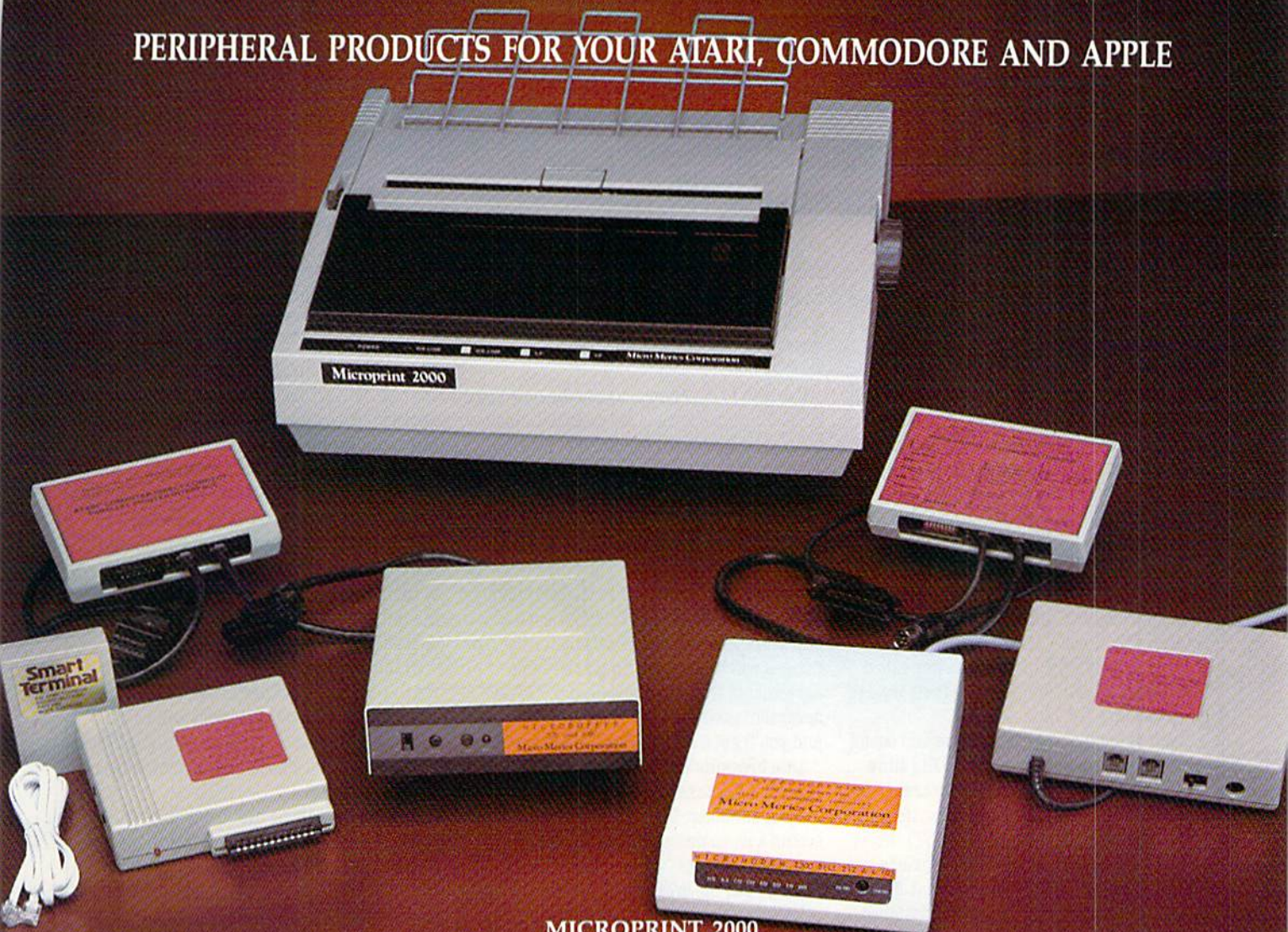
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## From Big Blue Reader to Tass Times in Tone Town

It's been a very busy month. I spent some time down in the Los Angeles area, attending OutrAegis '86, an event sponsored by **Aegis Development**. It was the shining lights of Amiga development: lots of demonstrations, talks, product discussions, video tapes and all with high levels of excitement. Aegis introduced **Impact**, a business graphics program, and also announced their entry into the CD ROM field. They will design development tools using the Amiga as a simulator.

I also got to meet several members of the **Southern California Amiga Network (SCAN)**. This is an affiliation of several Southern California Amiga user's groups. They produce a very slick newsletter called "Scanlines." I was impressed by their level of expertise and dedication.

My vote for the most innovative and useful program this month goes to **The Big Blue Reader** from **S.O.G.W.A.P. Software**. In a nutshell, this program reads and writes MS-DOS ASCII files on your 128 and 1571. No, it doesn't run MS-DOS software; it converts ASCII files to Commodore DOS format. This is not a bare-bones utility, but a well-designed, menu-driven program with enough intelligence to recognize what type of disk is in the drive at any time.

It reads directories, including date and time stamp info, file size and type. You can convert files, display them on the screen, or send them to a printer. Conversion from standard to Commodore ASCII and back is supported. It will also format disks in MS-DOS format. The manual is well written and easy to follow. If you have any need to move files back and forth from the MS-DOS world to the CBM world, this program is a must.

**Epyx** is starting a new line of games for the Commodore 64 called Street Sports. The first is **Street Baseball**. This is not a simulation of professional sports, but a rag-tag collection of local kids playing on the local park diamond. Each player has their own quirks. One may be a good fielder, but a not-so-hot batter. Another may not play well at all, but owns the ball and bat. The diamond may have rough spots, trash on the field, and an old rag for third base.

The game is laid out on a split screen, half devoted to a view of the entire field and the other half to a close-up of the action. The players are shown in detail that better

conveys their personalities. There can be one- or two-player games. Epyx would not be specific regarding the other titles in this series, but possibilities included basketball, volleyball and soccer.

I've also had a chance to use the new Epyx 500XJ high-performance joystick. In play-testing, this sculpted joystick gave consistently higher scores than traditional designs. It uses microswitches instead of leaf switches. These make an audible click that gives more precise control. Epyx guarantees the joystick for five years. The only drawback is that it can only be held in the left hand.

Epyx will also be introducing a series of clip art disks in **The Print Shop** format. The images will be licensed under the same agreements that Epyx has used to create several of their games. Check out the titles and you'll get the idea.

Late breaking news from Epyx: Charles Brannon has taken a position as Associate Project Manager. Does this mean we will be seeing a word processor from Epyx? Only time will tell.

**NewTek**, the creators of Digi-View, has released an upgrade software disk for their video digitizer for the Amiga. Among other things, it includes a new routine for creating Hold and Modify images that dramatically improves their apparent resolution. They have also created a motorized control for the color filter wheel that is needed with their hardware. It uses a servo motor to turn the wheel and plugs into the second mouse port. NewTek is also releasing software for the creation of video special effects and image processing. Effects include rotating an image in real time, wrapping a 2D image onto a sphere and rotating the sphere, scrolling an image around on the screen, and "page turning" an image.

There are now not one, not two, but three software companies developing Hold and Modify paint programs for the Amiga. I'll have details on at least one in the next column. Here's a hint: R. J. Mical, who designed the Amiga's operating system (Intuition), is involved in the design of one package.

**Inkwell Systems** will release the **Graphics Integrator II** for the 64. They've added a few new programs to the supported format list. At the top of the list is **GEOS**, followed by **The Print Shop**, **Koala**, **Super**

**Sketch**, **Billboard Maker**, **Computer Eyes**, **Animation Station**, **Blazing Paddles**, **The Newsroom**, **PrintMaster**, plus the old standbys **Cad Pak**, **Doodle!** and **Flexidraw**. Using **Graphics Integrator II** you can convert files from one format to another. You can also merge graphics files into word processors.

Inkwell will also be producing a line of clip art called Graphics Galleria. The first four in the series will be **Maps of the World**, **Holiday Themes**, **Borders & Signs**, and **Potpourri**. Each disk will be double sided, with one side in **Flexidraw** format and the other side in **Doodle!** format. Each side will contain 15 screens of images.

**Prism Software** has several new offerings for the 64 and 128. They are working on a wrestling game for the 64 that will be out by the end of the year, and they have signed Dick Immers to write a book on his knowledge of Commodore DOS.

Prism is one of the first companies to produce a chip for the open socket in the 128. The chip contains a terminal program, a word processing program, improved access to the 1700 and 1750 RAM packs, and additions to BASIC 7.0.

They are also working on a new operating system for the 128 that will use a graphical interface of menus, icons and a mouse. Applications supporting this operating system will include paint, term and word processing. They have a novel plan to allow users to copy the operating system onto extra tracks on any Commodore disk (tracks 36-40) so that it does not interfere with any existing software. Sounds interesting.

**Activision** has been releasing some unique software lately. **Little People** turns your computer into a home for friends of Randy Newman, while **Alter Ego** is a role-playing simulation where you can act out your fantasies in the safety of your own home. And now, **Tass Times in Tonetown**. **Tass Times** is an illustrated adventure for the 64 and the Amiga. Here's the story line: "Gramps has disappeared into another dimension, and all that's left behind is a cryptic message and a receipt for an anchovy and pepperoni pizza...Your search takes you on an intra-dimensional vacation to Tonetown...filled with an assortment of snousers, doodles, and tass cits."

**Westcom Industries** has released **Amiga**



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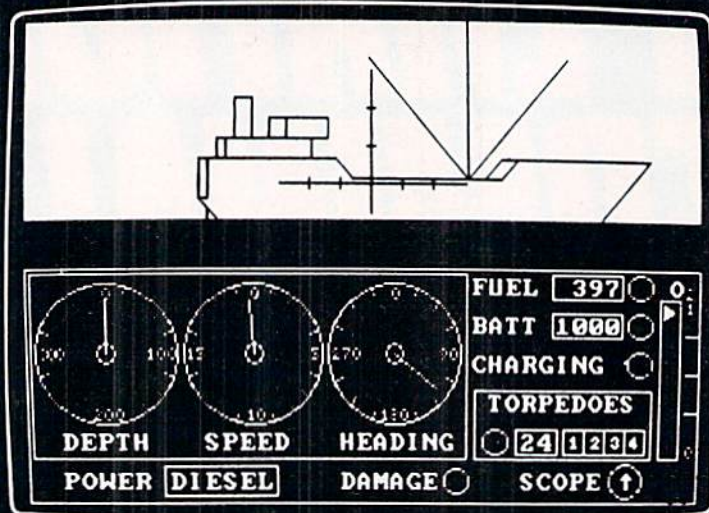


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## SILICON VALLEY

**Disk File Organizer (ADFO).** This is a file and disk directory manager that builds a data base of which programs are on what disks. It keeps track of the name, size, last change date, and full pathname of each file on every disk. The data base is updated automatically just by inserting the disk to be added into the disk drive. You can keep track of program locations, and get lists of disk names, directories and file names. Any information can be sent to a printer.

Considering that there are over 30 Fish disks, 40 or so Phase4 disks, 20 or so Hot Mix disks, and who knows how many more public domain disks from other sources, not to mention data files from word processors, spreadsheets and data bases, this program has made it much easier to keep track of where everything is. The latest version (1.20) supports alphabetized sorting as well. The guiding light at Westcom, Dan West is working on a hard disk back-up utility for that Amiga. He feels that such a program is an essential tool when using hard disks. I agree.

I've been told that there is at least one new product released every day in the Commodore market. Keeping track of new products, new tricks and techniques for using your computer, and still having time to enjoy these new products is tough. Columns like this attempt to keep you as up to date as possible.

Here are three other sources of information for your Amiga. The first is **Jumpdisk**, a monthly magazine on a disk by **Jumpdisk**. This magazine runs under **AmigaBASIC**, and usually has about 20 programs that you can run, list and modify. It also has about 20K of articles that you can read. The latest issue has a very clever point-and-read display.

Next is **Amigazine!** from **Digital Publishing**. This is also a disk-based magazine. It runs from Workbench, and all of the programs on it are C-based with icons. There are also quite a few articles.

The third is **Envisage** from **Chestnut Computer Graphics & Sound**. This is a five component product: a monthly magazine called *Icon*; a cassette tape of music created by the Amiga called *Crescendo*; a set of glossy photos of Amiga art called *The Light Gallery*; a tri-annual catalog of Amiga hardware and software products called *Cornucopia*; and a BBS dedicated to Amiga programs and information called *Matrix 7*. Each of these magazines are available by subscription, and **Jumpdisk** is available in some retail stores.

Continued on pg. 186

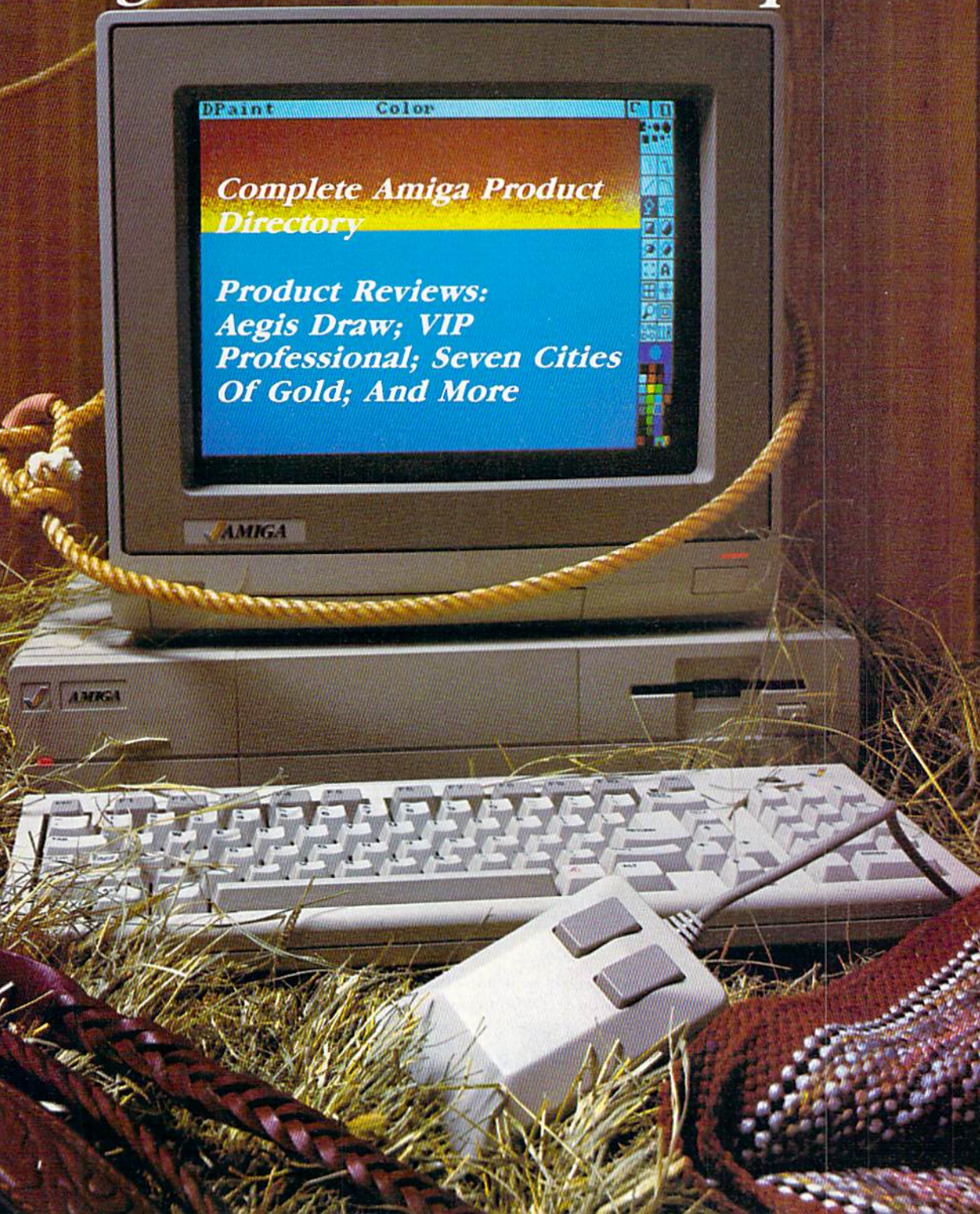


# AMIGA

The  
Buyer's  
Guide

A Redgate Publication November/December, 1986

## *Amiga Hardware Roundup*

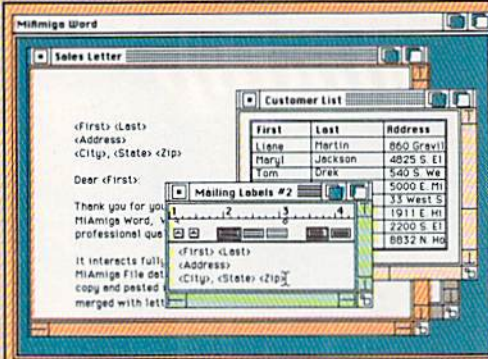




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only by size of disk...

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justification of text...

Copy and paste from  
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Mail Merge with MiAmiga  
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Easily define column widths,  
placement and justification...

Format numeric fields with commas,  
dollar signs, and/or decimals...

Transfer quickly between full  
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Transfer conveniently from  
selected record to data entry form...

Print columnar reports from list  
including automatic page headings  
and cumulative totals...

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4 House	Tucson	4	2.5	Yes	\$110,000
5 House	Santa Monica	3	2	No	\$177,000
6 Condo	Los Angeles	2	1	No	\$95,000
7 Apt	San Francisco	1	1	No	\$120,000
8 Condo	San Jose	2	2	Yes	\$78,000
9 House	Palo Alto	3	2.5	No	\$225,000
10 Apt	Santa Barbara	2	1	No	\$120,000
11 House	Santa Monica	2	1	No	\$95,000
12 Condo	Venice	2	1	No	\$88,000

Format mailing labels  
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Optionally capitalize the first  
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Modify form as needed for  
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created by system during  
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### MiAmiga Ledger

Easily define column widths,  
placement, and justification...

Multi-window screen allows  
convenient access to both Chart  
of Accounts and Journal Entries...

Edit/Post of Journal Entries  
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User-definable Chart of Accounts...

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Both current period and fiscal  
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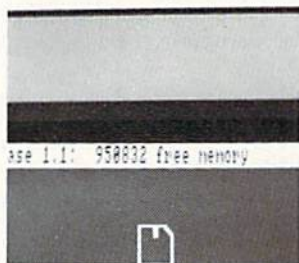
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## Aegis Draw CAD drawing package

512K Amiga; external drive.

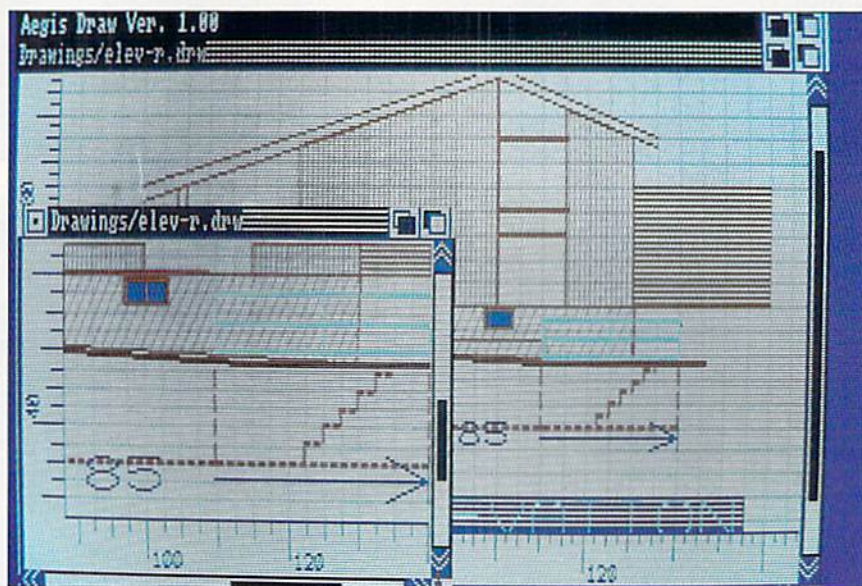
In being first to market with a computer-aided design (CAD) package for the Amiga, Aegis may well cause competitors to rethink the programs they have under development. Although pricing and ease of use would seem to position *Draw* as an entry-level CAD program, the capabilities it contains elevate it to a much higher and, therefore, more serious level.

For those not familiar with the concept of computer-aided design we'll point out that *Draw* is not a painting program such as *Aegis Images* or *Graphicraft*. CAD packages are for making finely detailed drawings such as schematics, blueprints, charts and designs. As such, they are of paramount interest to designers, architects, engineers, draftsmen, students and to those of us who want to know what CAD is all about.

After booting from the Workbench, the pull-down menus, options and tools of *Draw* may make it appear to be a painting program. It is easy to use, but don't let the seeming familiarity fool you. Early in its outstanding documentation, and at intervals thereafter, it is stressed that what you see on your monitor screen is not your actual drawing, only a representation. Your actual drawing is the hard copy you will eventually make with your printer or plotter.

If, as an example, you draw a square using triple-width lines, the vertical lines will be thinner than the horizontal lines. This is due to the shape of the pixels created by the Amiga. If your drawing is sent to a plotter, the lines will be of equal thickness.

The default screen for *Draw* displays a grid that may be turned off. At the left and bottom bor-



Aegis Draw from Aegis Development

ders are rulers. These can also be turned off or changed from metric to English measurement systems.

Because of the grid, drawing tools can be made to behave differently than what you're probably accustomed to; with the grid and Grid Snap on, you draw a square by selecting Square from the Tools menu. As with a painting program, move your cursor to the starting point, hold down the left mouse button, then drag the mouse to open the square to the size you need.

Grid Snap causes the sides and corners of your square to correspond to the nearest grid lines and intersections, allowing for a neater drawing that is closer to scale.

For scaling, there is another tool you'll find useful. When you've drawn your square, go back to the Tools menu and select Measure. Position your cursor at the beginning of one side of your square and drag it to the end of that line. A faint "ghost line" appears, aiding in accurate positioning. Now click the left mouse button, and the length of the line you measured is displayed in familiar blueprint style:

← 40' 9" →

Because *Draw* was constructed to conform to the Amiga's intuitive user environment, you work within a window that can be sized and moved, similar to the windows on the Workbench. *Draw* also supports multiple windows. With 512K of RAM, however, the limit is two.

When using windows, it's possible to keep your original drawing, assuming it's a floor plan, in one window. In the second window you could work on a clone of that drawing, trying modifications or perhaps adding wiring diagrams.

*Draw* also allows for layering. In our example, the floor plan would be the first layer. Over it, using another color for clarity, we could layer the wiring diagrams and, over that, the plumbing. A pop-up Requestor window tells you which layer is currently active and allows you to change to another layer, if desired. In this way, you could load in a complete drawing and modify the electrical layer without disturbing either the basic plan below it or the plumbing diagram above it. If you can find enough things to add to your plan, *Draw* will support up to 256 layers.

The information for your draw-



ings is held in a kind of database. In our first example, to keep things simple, the square of a record and the field of that record contain information on the sides and center of the square.

What this really means is that shapes created with *Draw* can be relocated on screen by dragging them with the mouse. In dragging the square, you have, in effect, edited the field pertaining to the center of the square in relation to the Cartesian coordinates of the screen. But you don't have to think about this. The program does that for you.

*Draw* recognizes a shape in the same way that a word processor recognizes a word or a paragraph. For this reason, it is possible to cut, copy, paste and delete your drawings. If you want to think of *Draw* as an image processor, you're probably right.

No feature of *Draw* is more spectacular than its Zoom option. Using this option, you can enlarge any part of a drawing and see it in its proper proportions. Unlike the Fat Bits feature of painting programs, a fine line enlarged 50 times is still a fine line.

To illustrate, add a filing cabinet to your floor plan. Then, using Zoom, enlarge only the cabinet. From the menu, select Text, create a label that says "Past Due" and paste it on the cabinet. Now zoom out, either in stages or to the full extent of the drawing. If you look very closely, you'll see your label represented—though unreadable—exactly where you placed it.

What can you do with an unreadable label? Remember what was said earlier: This is only a representation of the actual drawing. Printed or plotted to the proper scale, the smallest details in your drawing will be clear and sharp.

There are almost no limits to the Zoom feature. Imagine a

drawing of Earth as seen from space. In stages, you could zoom in to view continents, countries, cities, houses and the license plate on the car sitting in your driveway. Given enough memory, this is entirely possible.

For a hard copy of your drawings, a plotter is best because it can provide a larger image that most printers. *Draw* will support any plotter, and easy-to-follow driver routines are listed in the documentation. Because plotters work slowly, choosing Plot from the menu causes your drawing to be written to disk in a plotter file. Because of Amiga's multitasking capabilities, the actual plotting will not tie up your computer and you can begin to create your next drawing.

While a plotter accepts your total drawing, a printer uses only that portion showing on screen, in the manner of a screen dump. To print the entire drawing and to render all its fine detail, it is recommended that drawings to be printed be enlarged with the Zoom feature. In this way, portions are printed separately. They can then be pasted together to form a detailed whole.

The possibilities of using *Draw* seem almost endless. The examples given here represent things I have done and things suggested in the documentation. Your own imagination and the needs of your craft or profession will undoubtedly suggest more.

Although it seems to have been positioned as an entry-level CAD package, we find *Draw* to be a true heavyweight, containing most of the features found in *AutoCAD* and *VersaCAD* for MS-DOS computers—at a fraction of their prices.

—Ervin Bobo

\$199.95 retail  
Aegis Development; 2210  
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Monica, Calif. 90403;  
213-392-9972

## The Halley Project: A Mission In Our Solar System Educational game

256K Amiga.

The first thing you should know about *The Halley Project* is that it has little to do with the recent visit of Halley's comet. Because it is not topical, in fact, interest and excitement generated by the game should last for a long time to come.

The second thing to know is that *The Halley Project* was created by Tom Snyder and produced by Mindscape. Snyder believes the output of a computer should have lasting value, and Mindscape is responsible for the dazzling *Amiga Tutorial*. Together they have created one of the best games of the year, complete with stunning graphics, demands upon new reflexes and, underneath it all, some very painless education.

The program's title screens appear after booting, looking as if they were produced for a motion picture. As credits appear against a field of rushing stars, your Amiga begins to sing to you. Though the digitized sound is not exceptionally clear at this point and none of the sounds take advantage of the stereo capability of the Amiga, it is a nice surprise.

Playing the enclosed cassette tape gives you the details of your mission, or you can read them off the screen. There are 10 missions in all, each more difficult than the last. The object is to accomplish each one in the least possible amount of time.

On your first mission, you blast off from your base on Comet Halley, navigate to Earth, make a landing and then return to base. While this may seem simple, it is not. *The Halley Project* simulates our solar system in great detail, and nothing you learned in *Space*



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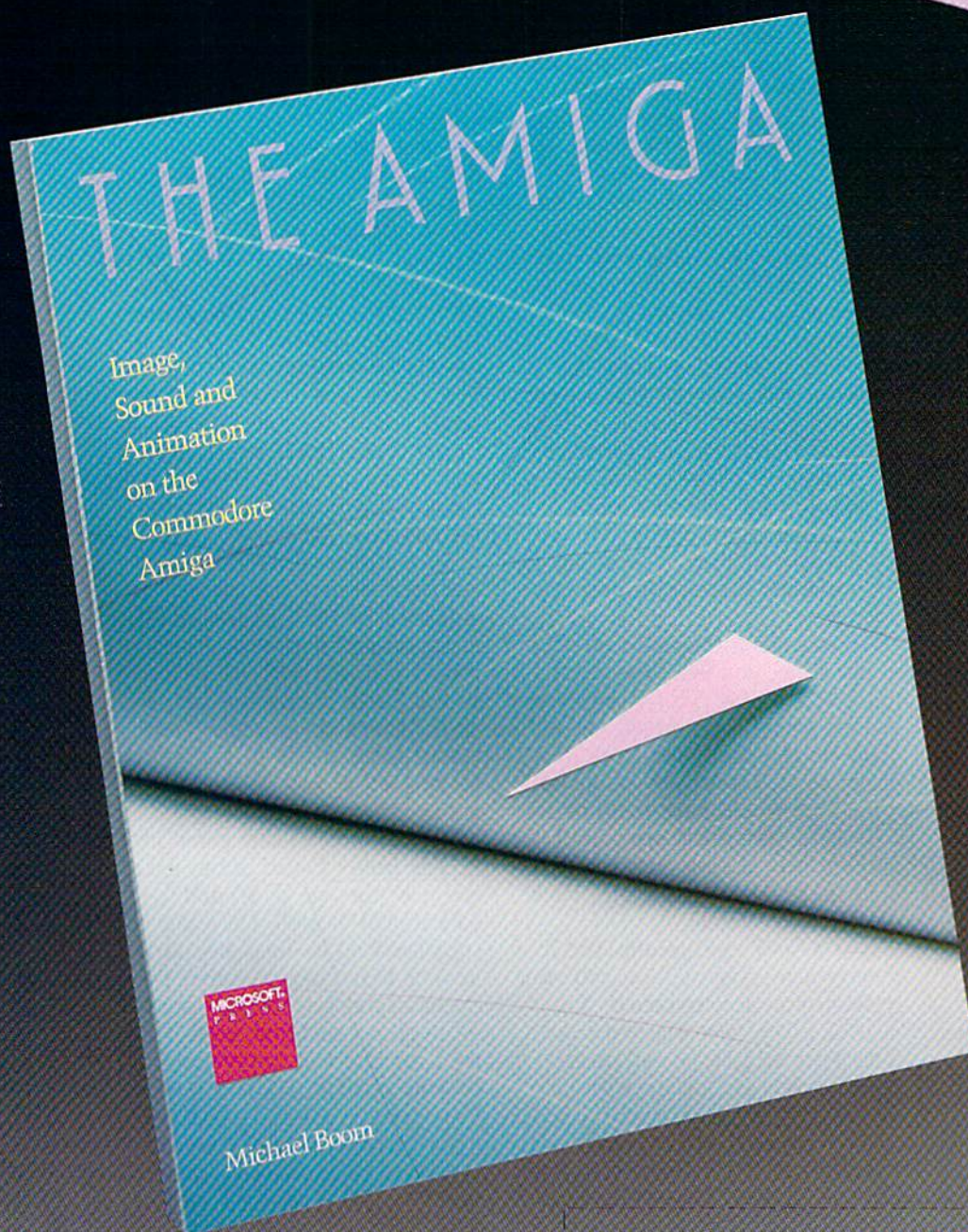
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# Reviews

*Invaders or Defender* is going to be of any help to you.

As the mission begins, your control panel shows elapsed time, speed and distance to target. The panel, which is fully operational, can be activated by using the mouse, and all its switches and levers really work. Click on the speed lever while in high thrust. It will move to the low position. Click on either the left or right direction, and the corresponding switch moves.

To find your exact location, click on radar. The screen changes and shows you an overhead view of the solar system. You are in the center. Other visible objects are the sun and planets. For your first mission, you have to know that Earth is the third planet from the sun. Using the Zoom feature, you expand the solar system until your target is at the edge of the circular screen. This allows your on-board computer to show the distance in kilometers and in which constellation your target now resides.

Navigation is based on the constellations. To help you, there is an overlay strip showing star patterns. Match the necessary constellation on the strip with the view through your port. The extra point of light, always in the center of the view port, will be your target.

Because time is important, you'll have to decide whether to cruise normally—up to 300,000 kilometers per second—or to use translight speeds. Faster than light, distance traveled shows up on your main screen while Klaxons sound, rockets roar and a kaleidoscope of color sweeps by. You'll have to be quick leaving translight mode, however. If not, you'll overshoot your target and have to find it again.

Once close to the target, it is identified on a message strip. This identification persists only as long as you keep the target centered on your screen. In the case of Earth, the planet will gradually

grow until it becomes a blue sphere. The moving dot near it is the moon.

At this stage, the mechanics of orbital motion come into play. Earth is either advancing or receding, relative to your position. In addition, it will go through phases of illumination as it orbits the sun. Sometimes the Earth is only a faint shadow against the blackness of space. As you come closer, relative motion increases. You'll have to be quick with your speed controls to avoid having the planet whip by you.

Because each planet has a different mass and gravity, and since the program takes those factors into account, there is no landing procedure that will work for every mission. Your orbital velocity and altitude will vary with each planet. Fortunately, you are given opportunities to re-fly any of the missions in order to improve your time.

As you reach the point of orbital insertion, you hear the strumming of a guitar. This is an incongruous sound, very much out of place on the command deck of a space ship. Almost any other audible clue would have been better.

To land, you must orbit until you are over a base, signaled by a loud beep. At that moment, click on the land switch.

If you land successfully, you'll receive a message telling you your mission was accomplished. You'll also be given your elapsed time. This time will be posted on a main scoreboard, along with scores of other missions.

On your view screen, you'll see a landscape that is representative of your target. These landscapes are not fanciful drawings, but superb renditions based on the latest photos and theories. These views, as well as that of the control panel, are reason enough to pull out the superlatives and liken the graphics to those found in the *Amiga Tutorial*.

To complete your mission, you

must now return to Comet Halley. This is much easier, since you merely locate it and fly to it. There are no involved landing procedures, and, once back, you may depart on another mission.

Other missions will not be as simple as the first one, and they must be flown in order. The only exception is re-flying a mission that has already been completed.

You may be told to land on a planet that has no atmosphere, on a planet that has no moons or on a moon that has no atmosphere. Information necessary to define your target will not be found in the documentation. We consider this a plus factor. Any game that sends you to the encyclopedia to further your fun is worth having, and in navigating by the constellations you will soon be able to identify the real things.

All motions of objects within our solar system are correct, as indicated by their phases of illumination and darkness, by the transit of the moon across Earth or the Earth across the sun, and all distances are to scale. Once you've made a trip to Earth, you'll be amazed at how long it takes to get to other planets.

We recommend this game highly. *The Halley Project* is fun for anyone over the age of 10 and educational as well. Once you've completed all its missions, turning in your best times becomes the major challenge. You may mail these scores to Mindscape. Those with the shortest completion times become competitors in a contest. First prize is a trip to Walt Disney's Epcot Center in Florida.

Almost as exciting is learning that *The Halley Project* is actually a qualifying run. Upon receipt of your best scores, Mindscape will inform you of the prime mission!

—Ervin Bobo

\$44.95 retail  
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, Ill. 60062; 800-221-9884 or 800-942-7315 in Ill.



## Intellectual Software Educational aids for Amiga users

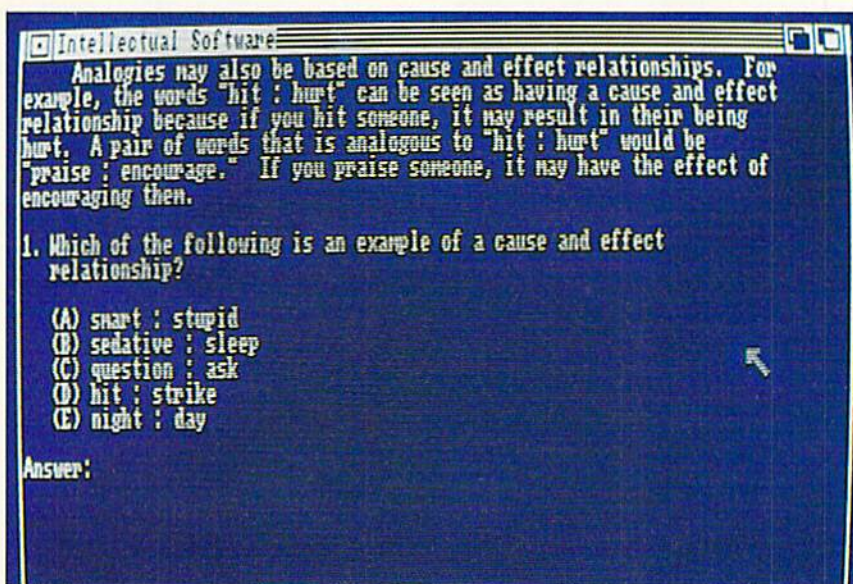
256K Amiga.

The educational software category for the Amiga is growing. The most comprehensive selection of educational packages we've found is the series from Intellectual Software, a division of Queue, Inc. in Bridgeport, Conn.

The programs we reviewed consist only of text on screen and use none of the Amiga's amazing graphic capabilities. Although the aim of educational software is to educate, not entertain, some entertaining aspects might be welcome. After all, making learning fun is something the Amiga does very well. Finding no graphics in this series was a disappointment, because the machine has great potential in the classroom, where pop and flash can hold a child's attention longer than simply text on screen.

Otherwise, the programs were fine. A subseries of programs to use as SAT (Scholastic Aptitude Test) study aids was especially good, and the questions were challenging. According to the vendor, research has shown that most students benefit appreciably by following the procedure used in the series. That procedure consists of learning a systematic approach to answering each kind of question and practicing with numerous sample items modeled on those found in the actual SAT.

The programs are serious in nature and designed for particular applications. There are 33 titles—ranging from *Reading Adventure I*, for elementary school students, to *Starting A New Business*, for adults. Language programs include several levels of French and Spanish. (See complete listing on page 105).



*Analogies I* from Intellectual Software

The best things about the entire series are its variety and consistency. A student need only learn how to use one program to be able to test or develop skills in a variety of subject areas.

We selected three programs for review that we feel are representative of the entire series: *Analogies I*, *French Grammar I* and *World Geography Adventure IV: Asia*.

**Analogies I**  
An analogy is the expression of a relationship between things that are otherwise dissimilar. Analogies are often used to test general knowledge and the ability to see connections and similarities between words. Since words frequently have more than one connotation, analogy problems require flexibility of word usage and recognition.

*Analogies I*, one of the programs in the SAT preparation subseries, leads students through a step-by-step process for solving analogy problems. The program requires that students solve each analogy in two steps: by selecting the "formula sentence" that best expresses the relationship between two key words, and by selecting the word pair among the answer choices that best

expresses a similar relationship.

Such rarely used words as olfaction, sycophant and ascerbic are used in the exercises, so students are able to increase vocabulary skills as well as test their abilities to determine the relationships between words. This program should be good preparation for taking the SAT.

*Analogies I* is organized into 10 lesson modules and includes about 60 analogies.

\$65 retail; two disks

### **French Grammar I**

*French Grammar I* is designed specifically for students who have had only one year of French. Even so, it is simple enough for use by students who haven't studied French, as long as they've studied another foreign language. If you haven't studied French but are bilingual, you may still be able to get through *French Grammar I*.

*French Grammar I* includes 10 lesson modules. Topics covered are: Gender of Nouns I and II; Gender and Number; Plural of Nouns; Nouns and Articles; Definite Articles; Prepositions; Avoir and Etre; Idioms with Avoir; and Il est, C'est.

\$34.95 retail



## World Geography Adventure IV: Asia

In *World Geography Adventure IV*, students explore Asia on a treasure hunt, earning points by correctly answering geography questions. The more questions the students answer correctly, the more treasures they find.

The program is structured to encourage students to play the game repeatedly. Answers to questions are not included in the program or manual, and the only way to go back to a question and try again is to play the game again. The vendor maintains that students are more likely to remember the facts presented in the program if they discover the correct answers themselves, using a map, atlas, other reference books or through discussions with other students.

This may be true in a classroom situation, but not having the correct answers for home use is frustrating. A child may not have access to the resources available in a classroom when using the program at home. Though each incorrect answer branches to an explanation of why the answer is incorrect, an optional feature that would allow students to go back and try again without restarting the game is sorely needed.

The program focuses on 41 countries in Asia and consists of 41 short chapters. Each chapter includes one to five multiple-choice questions on the country being explored. The countries include Afghanistan, Bhutan, Indonesia, Kampuchea, Oman, Saudi Arabia, Sri Lanka, the Soviet Union and Yemen.

—Lori Tracy

\$59.95 retail  
Intellectual Software, a division of  
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800-232-2224

## Seven Cities Of Gold Adventure game

256K Amiga.

*Seven Cities Of Gold* is just the kind of game that you can lose yourself in, literally. In fact, you can even lose your life if you're not careful.

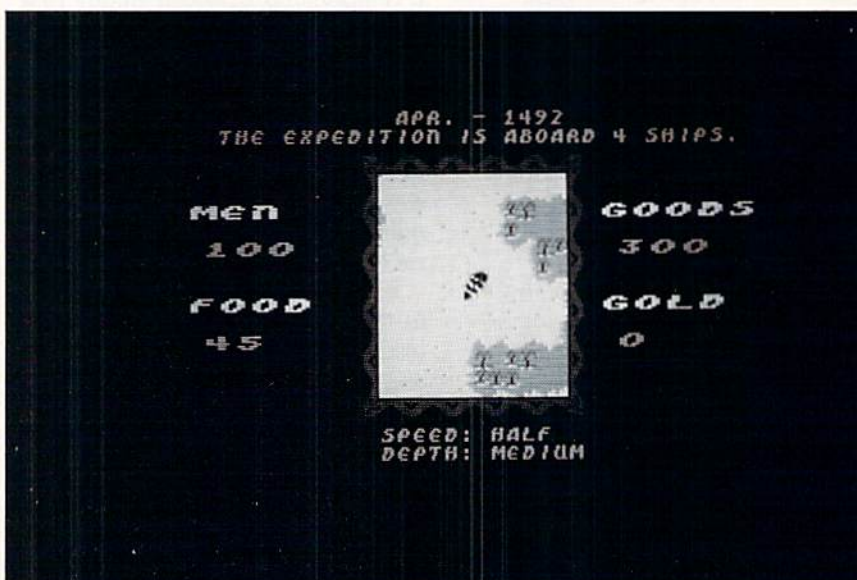
You begin the game by putting yourself in the place of a 15th century Spanish explorer with one goal in life: to find the fabled Seven Cities of Gold. Your obsession with these seven kingdoms began, according to the manual, when an old waterfront seaman told you the tale of seven bishops: "Christian men who had been blown far off course into an unknown realm and who established seven kingdoms whose splendor ranked with the reign of Solomon."

Before you can begin your quest, you need to take care of a few minor housekeeping duties. It's necessary to create a Historical Map Disk to record your travels. After using Kickstart, just insert the *Seven Cities* disk into your Amiga's disk drive. When the program finishes loading, use

your joystick\* (or the keyboard) to move the selecting highlight to "Make a Historical Map Disk," press the joystick button and follow the directions. You're ready to begin your search for the Seven Cities of Gold.

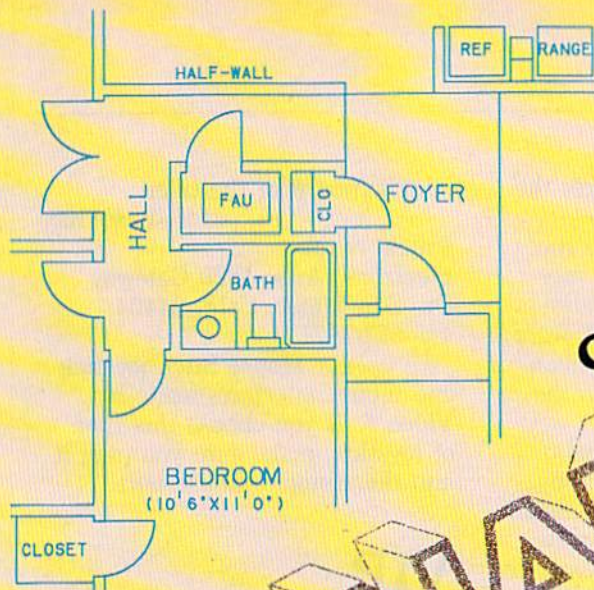
All you need now is the funding and equipment to carry out your quest. Of course, you need an audience with the king and queen, and this is where playing the game begins. You have four choices of skill level: observer (demo), novice, journeyman and master. It's really not necessary to choose the observer level; it's much better to jump right into the game and choose novice. Otherwise you won't get a royal audience, and you get automatic funding for your expedition.

Now that you've got the backing of the court, your next stop in Europe is The Outfitters. Food is bought and bartered for in relation to the number of men in your expedition. First decide how many men you want, then how much food to take along. Experiment with the two quantities at first. Take as much food as you can; you'll need it for long expeditions on land. Be careful about the amount of goods you take. Too



*Seven Cities Of Gold* from Electronic Arts



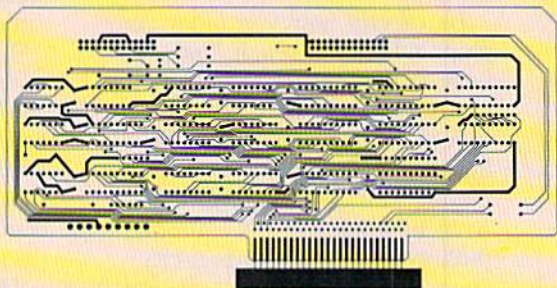


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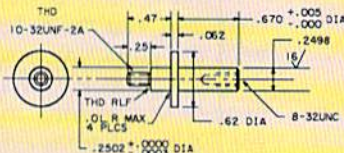
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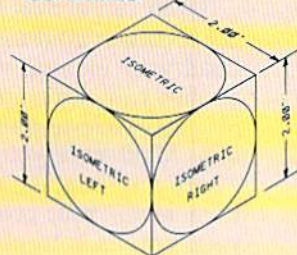
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SIGNAL NAME	COMP NAME	PIN NUM	SOURCE	TYPE
S00001	J1	2	*	CON
S00001	U1	1	*	7400
S00002	J1	3	*	CON
S00002	U1	4	*	7400
S00003	J1	4	*	CON
S00003	U1	9	*	7400
S00004	J1	5	*	CON
S00004	U1	12	*	7400
S00005	J1	9	*	CON
S00005	U1	2	*	7400
S00005	U1	1	*	7400
S00005	U1	10	*	7400
S00005	U1	13	*	7400
S00006	U1	3	*	7400
S00006	U2	1	*	7400
S00007	U1	6	*	7400
S00007	U2	2	*	7400
S00008	U1	8	*	7400
S00008	U2	4	*	7400
S00009	U1	11	*	7400
S00009	U2	5	*	7400
S00010	U2	3	*	7400
S00010	U2	9	*	7400
S00011	U2	6	*	7400
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many goods will overload your men, but you don't want to run short when it comes time to trade with the natives.

Now it's time to set sail for parts unknown. As your ships leave port, make note of where you are and in which direction you're heading. Choosing the View Map option gives you your present position. The Amiga makes maps for you as you go, and it's wise to check them frequently. It's also useful to make notes as you lead expeditions on land.

Be careful how you moor your ships when you reach land. It's easy to destroy them by running aground. As your expedition moves over the land, look for villages. A code on the back of the manual tells you what to expect from inhabitants. For example, a pink symbol represents a city-state confederation and an agricultural economy. These clues are only visible to novices.

If your goal is trade rather than conquest, you must deal directly with the chief, but you have to find him first. If you are lucky enough to find him, make sure you have enough goods or gold to trade. I don't know how many times I wandered around a village looking for the chief, only to find I didn't have enough goods once I finally located him.

If you run across a gold mine, get as much gold as you can. Load your men up with as much as they can carry and stash the rest for retrieval on a later expedition. Make sure you carefully note where (latitude, etc.) you put it. Remember, your goal is to find your way back to useful places and avoid dangerous ones. This might be a good time to return to Europe. If you feel adventurous, however, continue your search on land. If you meet natives, this time you'll have plenty of loot to impress the chief.

Formulating goals, such as trade or conquest, before you

leave your home port makes the game more fun. Decide before you leave whether you are the conquering-hero type, the merchant/trader type or the missionary type. You have the option of establishing forts or missions after conquering or trading with the natives.

I decided I was a merchant/trader type. Unfortunately, my men and I ran out of food during our first expedition in the new world. The last words I heard before I expired from starvation were, "Sir, you are the last to survive."

The next time I thought I'd be smart and take as much food as I could. Unfortunately, this meant I could take very few goods. When I finally located the chief of the first village (an Aztec city) I encountered, all he said was, "No trade." I did manage to find some gold, however, so I felt the quest wasn't a total loss.

I returned to Europe to find cheering crowds eager to hear my tales of the new world. I stopped at my home to study the maps I'd created and at the pub to record my maps and discoveries. Wise conquistadors are advised to stop at the pub after every trip or else lose all the maps and discoveries made up to that point.

I also stopped at court for recognition of my accomplishments. Unfortunately, the consensus at court was that my performance was poor. If I had done well, I might have been given a title.

All in all, I found *Seven Cities Of Gold* to be an entertaining game, and the Amiga's graphics really enhance the game experience.

Like many adventure games, it takes a bit of playing to become skilled enough to take advantage of all the features and avoid boredom. Even novice explorers, however, will find plenty to keep them occupied, as long as they carry out their quests with an explorer's spirit. Just set sail and let your

imagination take the tiller.

—Lori Tracy

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\*We used a Mouse Stick joystick and mouse interface, made by Video 7. If you choose this type of joystick, make sure you plug it into the Amiga's mouse port.

## VIP Professional Integrated spreadsheet, database, graphics

512K Amiga.

If I were to describe *VIP Professional* in a single sentence, I'd have to say that it is like *Lotus 1-2-3* with color. The emulation is so complete that any of the numerous books on the applications of *1-2-3* will apply to *VIP*—including the keystrokes—giving Amiga owners access to the workings of the most popular piece of productivity software.

*VIP*, like *1-2-3*, is a combination spreadsheet, database and graphing utility. Put your labels and numbers on the spreadsheet, manipulate the numbers according to dozens of math and business formulas, sort them on any field, then turn the numbers into one of several business graphs.

If that sounds like a lot for one program to do, it is. This is why it requires 512K and why you are left with a work sheet of about 60K. Now 60K is enough for a large work sheet, but whether you actually are able to use that much depends on how you load the program. If you use more than one external drive, disconnect it. Then, after using the Workbench to set Preferences, be sure to close the window before opening *VIP*.

Although *VIP* features an



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## PC Industry Insiders:

### RENT A NEW PAIR OF EYES!

I'm not being facetious. Subscribing to P.C. Letter is like renting a new pair of eyes for a year. And your new eyes can give you a completely different perspective on what's happening in the personal computer industry.

You've already got a lot of things to worry about: new product development, managing your people, making sure your company has enough money. At the same time, new things are happening at a blinding pace: new strategies, new technology, new management techniques. That's the way things are in the pc business: constant change.

It's pretty hard to keep up with the change and do your job at the same time. But my only job is to understand what's important and why. So I travel around the country talking to hardware and software vendors, dealers, users, venture capitalists, publishers, consultants, anybody who has something important to say about the pc business. And twice a month I give you the latest take on what's important. That's what I mean by asking you to rent a

new pair eyes: subscribing to my newsletter is a way to see trends you might not pick up in the normal course of business.

My name is Stewart Alsop. I've been involved with the pc business full time now for five years and before that was trained as a business editor. Five years ago, I was executive editor at Inc. magazine. Since then I've been chairman of the Boston Computer Society, editor of Micro Marketworld, co-founder of Soft•letter, and editor of

Infoworld. Now I'm West Coast Editor of PC Magazine, as well as editor and publisher of P.C. Letter.

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# Reviews

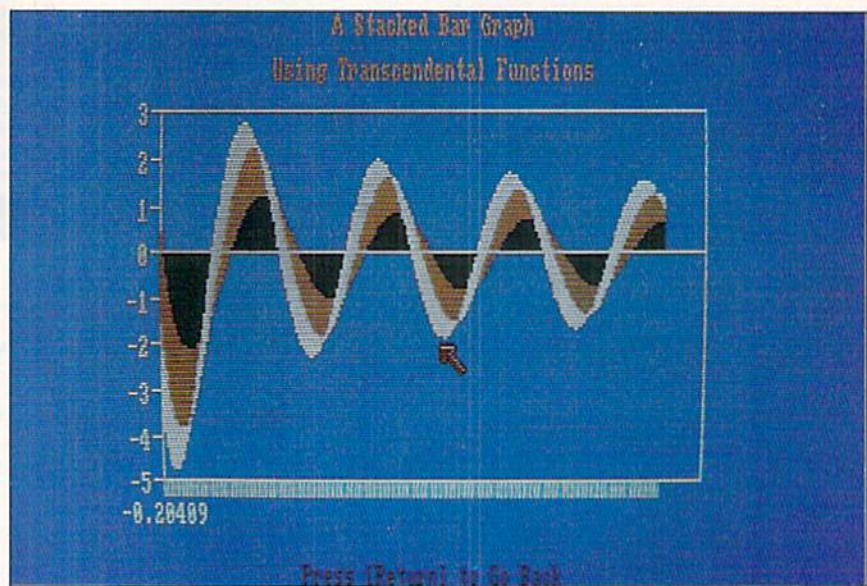
intuitive interface, memory requirements preclude multitasking. The program's documentation recommends expanding RAM to at least 1 megabyte (MB), and both the Tecmar and Cardco memory-expansion units have been tested and work well. With the Cardco interface, *VIP* supports up to 8MB.

After booting, you're presented with a work sheet having columns designed by letters and rows by numbers. Combined, these coordinates indicate the absolute address of any cell on the sheet; A1 is the cell in the top left corner, and one step to the right is B1. Move the cursor down and you are at B2. In all, *VIP* allows you to create work sheets of up to 8,192 rows and 256 columns, giving you a possibility of more than 2 million cells, with sufficient memory, of course.

Just above the work sheet, an information block keeps you current as to where your cursor resides, and any information you type into a cell is displayed in that block until you enter it by pressing Return or the cursor key.

That block also displays menu choices and a brief explanation of each item in the menu. Press "/" at any point and the main menu appears. The cursor is found resting on the Work-sheet entry, and just below it you are told that this selection invokes work-sheet commands. Select it by pressing Return. The menu changes to show the commands you can use and the results of each command. Because the menus and submenus cover virtually every operation of *VIP*, you'll find much of your work is done with just the cursor and Return keys.

Using what are by now almost conventional spreadsheet routines, *VIP* supports the use of "@" commands as a kind of shorthand for entering commonly used formulas, as well as more complicated formulas traditionally used in



*VIP Professional* from VIP Technologies

business. For example, "@sum(B1..B12)" would add the numbers in the range specified and present you with a total in the cell you used to enter the formula. A formula can be absolute, pertaining to only one range, or relative, performing the same operation on many ranges.

In addition, *VIP* supports the creation of macros and gives you quite a bit of documentation on the subject. Because macros have almost attained the status of programming languages and because there are many good books on the subject, we'll simply note that macros are similar to batch files or programmed function keys. Using macros, it is possible to set up a formula you may need to repeat or to set up a series of sort commands.

Saved as a macro and with a key or keys assigned to it, a command can be invoked at any time with just one or two keystrokes. This becomes a great timesaver and a hedge against a faulty memory. Once you have the command in memory, you don't have to remember syntax, only a single key.

OK, you've sped through the creation of a work sheet and now you want to turn the numerical information into a graph. Once again, menus and submenus lead you through all the choices: type of graph, range of the work sheet for labeling and range or ranges of numbers to be included in the graph. *VIP* can give you all kinds of graphs: line, bar, stacked-bar, pie, etc.—whatever best expresses the information you wish to convey.

If you want to make a presentation-quality graph, you may save your information to a graph file, load the *Graphprint* module and call up the graph file.

It is only in *Graphprint* that you actually use your Amiga controls. (Remember, *I-2-3* was not made for a mouse.) By using the mouse and pull-down menus, you can create graphs with stunning colors. In addition, you have at your disposal all the Amiga Notepad fonts for creating labels and legends.

Such charts may be printed in color as well, as may the less-spectacular charts made by the *VIP* main program. With a standard printer, a black-and-white option of *Graphprint* translates colors



into shadings, so you may still have the full utility of the program.

As a database, *VIP* may be just a little different than what you've seen before. Record fields are laid out right to left instead of top to bottom. For example, a name would appear in column A, the address in B, state in C, zip code in D and so on.

When using *VIP* as a database, each cell becomes a field holding one item of information such as an address or zip code. Your records can be sorted on one or two fields, so it would be possible to keep records in alphabetical order and grouped by zip code.

Just because a program such as *VIP* is useful, it does not mean that it is difficult to use. *Lotus 1-2-3* attained its status on the best-seller list because it could do many things well and because

most literate people could use it almost immediately.

*VIP Professional* also emulates 1-2-3's on-screen tutorials, menus, submenus and documentation. This assumes users know nothing about spreadsheets and provides excellent background information and a step-by-step example of a home budget program.

*VIP* is one of the more expensive programs for the Amiga, but it is well worth the price. Though several other good spreadsheets recently have appeared on the Amiga market, we've seen nothing else that puts the strength, simplicity and utility of *VIP* into one neat package.

—Ervin Bobo

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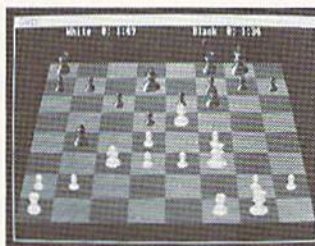
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# AMIGA HARDWARE ROUNDUP

**O**ne highly acclaimed aspect of the Amiga is its open architecture, which allows the addition of extra hardware devices through one or more of the computer's expansion ports. Many companies, in addition to Commodore Business Machines, Inc., are taking advantage of this open architecture and creating new lines of Amiga hardware products. These new devices greatly enhance the machine's capabilities, allowing users to work faster and more efficiently.

There are more than 1,000 registered developers of Amiga products, many of whom produce only hardware. Some of these developers are now shipping products, or soon will be, that most serious Amiga users should be aware of. The following is a brief report on many of the new Amiga hardware products coming to market.

## RAM Expansion Beyond 512K

Before you expand your Amiga's random-access memory (RAM) beyond the 512K internal limit, you need to be aware of several facts. First, the 68000 micropro-

cessor in the Amiga is able to address a total of 16 megabytes (MB) of RAM directly. Due to certain design restraints, however, the computer can only use 8.5MB. (The IBM PC can only directly address 640K, less than 1MB.) The Amiga can hold 512K inside its chassis. To add more RAM than that will require some kind of expansion interface. Some RAM upgrades supply that interface, others do not.

If you are using *Version 1.1* of the Amiga operating-system software, you will have to execute one or more programs at start-up for the computer to recognize the extra RAM (or any other hardware









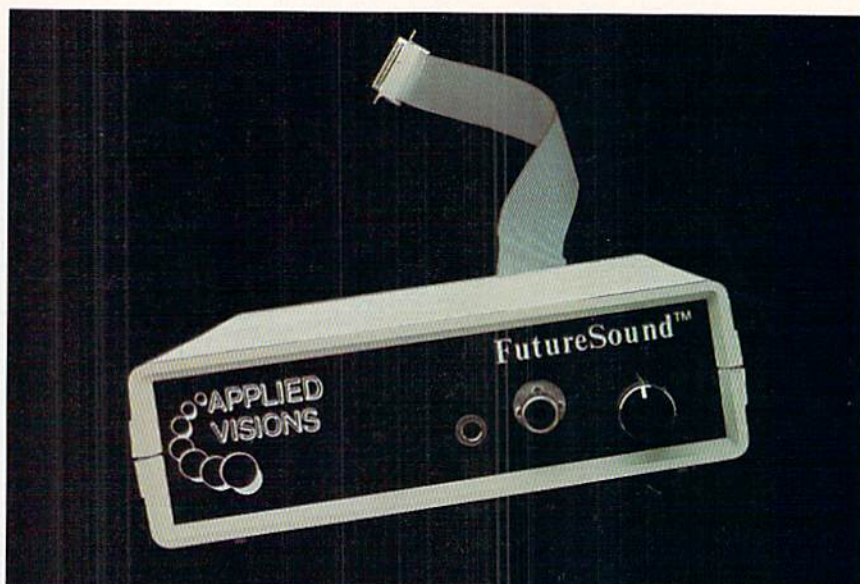
device for that matter). This is accomplished by entering appropriate commands in your Workbench Start-up Sequence in the "S" directory on your boot disk. These commands (usually **Add-Mem**) direct the operating system to expect RAM at a given address. In most cases, the RAM expansion maker will supply you with a program that installs the necessary software on your Workbench disk.

If you are using *Version 1.2* of Kickstart/Workbench, you have the added convenience of automatic configuration devices, which inform the computer they are there and tell what resources they need. The Amiga performs necessary housekeeping arrangements for these devices, enabling them to work in harmony. The result for the user is simplicity. Setup requires no effort at all.

The following five companies currently market RAM expansion cards for the Amiga:

Tecmar in Solon, Ohio, produces the T-Card, which installs on the main expansion bus on the right side of the Amiga. The T-Card can add a maximum of 1MB of extra RAM. It can be purchased fully populated with the 1MB or as a 256K or 512K card that can have extra RAM added. The T-Card contains a clock with a battery, so users never need to set the time and date after doing so initially. It also has a SASI (Schugart Associates System Interface) hard drive interface built in. Only Tecmar's hard drive will work with the card at this time, however.

The T-Card cannot automatically configure, so it is necessary to change the start-up sequence to activate it. Tecmar supplies a utility program that does this. We used the T-Card for several months (with *Version 1.1* software) and found that most, but not all, programs will work with the extra RAM. None of the hard disk drives or alternate processors we have (except the Tecmar hard disk drive) worked properly with the card installed, and we were not able to check it with *Version 1.2*.



*FutureSound from Applied Visions*

The T-Card does not have a pass-through, so you cannot add anything else to the main bus except the T-Disk hard disk drive. The T-Card's retail price is \$995.

Toronto-based Comspec offers the AX2000 2MB expansion card. It may be the best piece of hardware on the Amiga market today. The RAM comes in a small Amiga-colored metal box that easily plugs into the main bus. It installs in seconds, faster than the extra 256K you may have added when you bought your Amiga. Using software *Version 1.1*, the card requires the use of **Add-Mem** in the start-up sequence. When using *Version 1.2*, it automatically configures. In any event, the card's hassle-free extra memory is nice to have.

The Comspec card was the most compatible RAM-expansion system we tried, in terms of hardware and software combinations. We liked the fact that it offered an available pass-through edge connector from the Amiga's main bus. Comspec says, which we were not able to confirm, that you can piggyback two of its cards and have more than 4MB of main memory. The Comspec 2MB card is \$899 retail.

Cardco offers the aMEGA 1MB card, another easy-to-install RAM upgrade. It consists of a small box, which is longer than Com-

spec's card but smaller than Tecmar's, that plugs into an Amiga's expansion port. It works under *Versions 1.1* and *1.2* (automatically configures with *1.2*) and offers a pass-through to the main bus. It was not as compatible with software and other hardware as the Comspec board, but more so than the Tecmar. The Cardco board sells for \$550 retail.

One of the largest RAM-expansion cards we found was the RS Data, based in Houston, 4MB RAM card. This card even offers an option to add another 4MB, so you can—with one card—increase your Amiga to a whopping 8.5MB.

Unlike the previous three, this card is not enclosed in a case. It is an exposed circuit board with RAM chips and an 86-pin edge connector and it looks like an IBM-style RAM card. It was originally designed to be mounted inside Amiga RAM-expansion boxes made by The Micro Forge, but RS Data says it now plans to market its own boxes with its RAM cards.

The RS Data card works with *Version 1.1* software. It does not automatically configure with *Version 1.2*, but works if installed using the **AddMem** command. While we did not test this card thoroughly, we did try it with some *AmigaBASIC* programs and successfully allocated over 1.5MB



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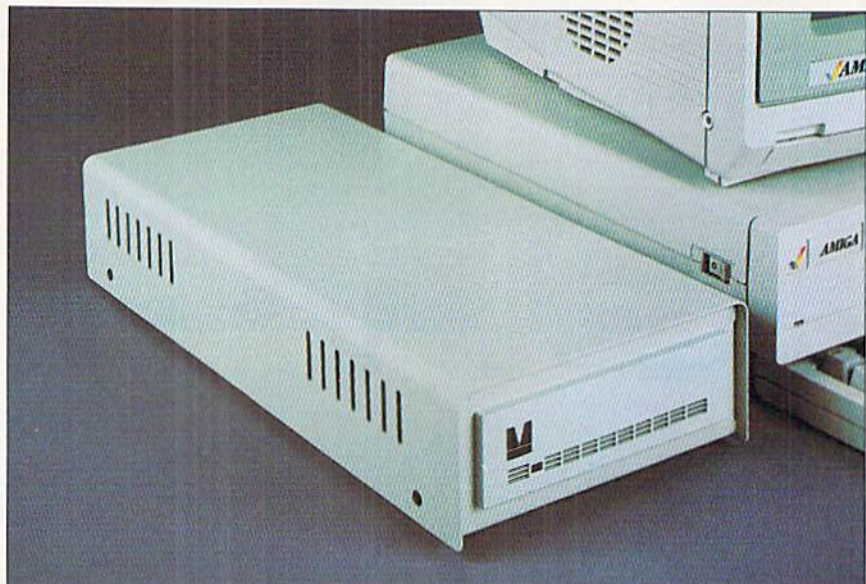
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of memory for basic use, leaving more than 2MB for other Amiga tasks. That much memory allowed us to manipulate 1000- by 1000-element arrays (1 million elements) quite easily.

At this time, the RS Data card is the largest single RAM upgrade available. It is also, therefore, the least expensive in terms of dollars per megabyte. The RS Data 4MB cards retails for \$1,246 and can be purchased in a 2MB version for \$850. All versions require an expansion device with an 86-pin format.

The last RAM-expansion board we were able to examine is the Alegra Memory Expansion Unit from Access Associates, Santa Clara, Calif. The Alegra card comes with 512K RAM, which expands an Amiga to 1MB of RAM. The card can be expanded by replacing its 256K RAM chips with a user-installed 1MB RAM chip. The current cost of this 1MB upgrade is quite high, but it may soon become more reasonable.

The Alegra card automatically configures under *Version 1.2* software and works with *Version 1.1* by using **AddMem**. We did not have sufficient time to test it with a lot of software and other hardware for compatibility. It was easy to install, however, and we completed the task in about five minutes. The card does not have a

pass-through to the main bus, but its vendor believes users simply want more RAM and are not worried about adding larger expansion hardware. They may be right. The Alegra card sells for \$379 retail.

In addition to these five companies, several others have announced products that extend an Amiga's RAM over the 512K internal maximum. These include Skyles Electric Works, Microbotics, Inc., Interactive Video Systems and The Micro Forge. Products from these firms may be available by the time you read this.

## Hard Disk Systems

A computer as powerful as the Amiga often requires a mass-storage device, such as a hard disk drive. We were able to look firsthand at three such drives, each with 20MB capacity.

Tecmar produces the T-Disk, a 20MB hard disk drive that connects to an Amiga via Tecmar's T-Connect (a simple SASI interface, no RAM) or T-Card SASI interface. We used the T-Disk for several months with a 1MB T-Card interface; an earlier preproduction drive failed after a few weeks. The T-Disk and T-Card worked fine together, but did not work with non-Tecmar RAM

cards, hard disk drives, expansion boxes or alternate processors.

We were only able to test the T-Disk with *Version 1.1* software. The T-Disk itself is \$1,495 retail, but the required T-Connect or T-Card raises the price to at least \$2,000 for a 20MB system.

A 20MB hard disk system is available from The Micro Forge in Atlanta. This drive is designed to be used externally or inside an expansion box. We used the drive routinely for several months without any problems. It was compatible with the Netch 68881 math coprocessor board, the Comspec RAM card and *Version 1.2* software. We did not use the drive extensively with *Version 1.2*.

The biggest complaint we had was with the unit's power supply, which could be placed out of sight with a longer connection to the drive. When using the expansion box, the power supply is no problem. We basically liked the drive, found it reliable and fast and missed it when we had to return it. The Micro Forge CD20 sells for \$1,495 retail. If you don't have an expansion box, a single-slot adaptor is less than \$100.

A new entry is the Microbotics 20MB hard disk drive. Microbotics is in Richardson, Texas. This drive differs from the previous two in that it does not connect to an Amiga via the main expansion bus. It connects instead to the printer port, leaving the main bus free. We were only able to use it for a few days, but found it to be slightly slower than the Tecmar or Micro Forge hard disk drives. The Microbotics drive works only under *Version 1.2* software, although the company promises compatibility soon for both *Versions 1.1* and *1.2*.

The drive does offer a SCSI, (small-computer system interface) however, and can be piggybacked with up to four Microbotics drive systems, each with its own power supply. Interestingly, the Microbotics drive does not have a cooling fan, using its metal housing instead to dissipate heat. The Microbotics drive retails for \$1,495 and includes its own interface.



# Software designed for AMIGA.

## **Lattice® C Compiler**

**\$149.95**

With more than 30,000 users worldwide, Lattice C Compilers set the industry standard for MS-DOS software development. Lattice C gives you all you need for development of programs on the AMIGA. Lattice C is a full implementation of Kernighan and Ritchie with the ANSI C extensions and many additional features.

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Designed as a programmer's editor, *Lattice Screen Editor (LSE)* is fast, flexible and easy to learn. *LSE*'s multi-window environment provides all the editor functions you need including block moves, pattern searches and "cut and paste." In addition, *LSE* offers special features for programmers such as an error tracking mode and three Assembly Language input modes. You can also create macros or customize keystrokes, menus, and prompts to your style and preferences.

## **Lattice dBC III™ Library**

**\$150.00**

The *dBC III library* lets you create, access and update files that are compatible with Ashton-Tate's dBASE system. *dBC III's* C functions let you extend existing dBASE applications or allow your users to process their data using *dBC III* or dBASE III.

## **Lattice Make Utility (LMK™)**

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An automated product generation utility compatible with UNIX Make, *Lattice Make Utility (LMK)* lets you rebuild complex programs with a single command. Once you specify the relationships of the various pieces of your system in a dependency file, *LMK* automatically rebuilds your system the same way every time, and only compiles program files that have changed. But *LMK* is not limited to updating programs. You can use *LMK* to update documentation or perform any executable command!

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**\$75.00**

*Lattice Text Utilities* consists of eight software tools to help you manage your text files. *GREP* searches files for the specified pattern. *DIFF* compares two files and lists their differences. *EXTRACT* creates a list of file names to be extracted from the current directory. *BUILD* creates batch files from a previously generated file name list. *WC* displays the number of characters and optionally the checksum of a specified file. *ED* is a line editor which can utilize output from other *TMU* software in an automated batch mode. *SPLAT* searches files for a specified character string and replaces every occurrence with a specified string. And *FILES* lists, copies, erases or removes files or entire directory structures which meet the specified conditions.

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*Unicalc* offers the versatility you've come to expect from business software, plus the speed and processing power of the AMIGA.

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- Floating point and scientific notation available
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- Unique customization capability for your every application
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- Full menu and mouse support

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# Lattice

# Service



The above-mentioned hard disk drives are all slow, compared to hard disk drives used on IBM PCs. The Micro Forge CD20, the fastest, is only about two to three times as fast as the Amiga's floppy drives. One reason for the lack of speed is that none of these drives use direct memory access (DMA) to transfer data. With all the DMA channels available, Amiga hardware developers should be using them. So far they are not. Take heart, Commodore has developed a DMA hard disk drive controller and is licensing it to some hardware developers.

Several companies are now promising DMA drives. One is Byte By Byte of Austin, Texas, which has designed the PAL expansion system and is promising a DMA hard drive for it.

Another is Supra of Albany, Oreg. Supra markets a high-speed 20MB hard disk drive for the Atari ST. The company intends to deliver a version for the Amiga by Christmas. This drive would also be a 20MB system and would sell for about \$799 retail.

The Micro Forge has announced The Business Partner, a 20MB drive with 2MB of RAM. Not much was known about this drive at press time, but it should be available by the time you read this.

## Alternate Microprocessors

**S**ome of the most interesting hardware products for the Amiga are substitute microprocessors and math coprocessors. These devices are mounted internally, replacing the Motorola 68000 chip.

One such product comes from Computer System Associates (CSA) in San Diego. It's the Turbo Amiga board—consisting of a full 32-bit 68020 microprocessor, a Motorola 68881 floating-point math coprocessor and 512K RAM—which runs at more than twice the normal speed of the Amiga. Once the Turbo Amiga board is installed in your start-up sequence via its new commands, the computer appears to func-

tion normally.

In truth, you will have the equivalent of a Digital Equipment Corporation VAX computer on your desk. According to the Byte Information Exchange, Turbo Amiga actually outperforms a VAX in certain types of computations. The 68881 allows you to calculate real numbers up to 10 times faster than before, and the 68020 performs many operations at twice the speed of the 68000, even when running at the same clock rate.

Combining the 68020, the 68881 and the higher clock rate gives true mainframe power to an Amiga user. But this extra power does extract a price in software compatibility. Many commercial programs will not run with the CSA Turbo Amiga board in place. Check your software to see if it is compatible.

In addition, your programs will not automatically benefit from the 68881 math chip. Software must be written to check for the availability of the chip. Very few Amiga programs currently do that, but this will change as the number of 68881s in use increases.

The major users of the Turbo Amiga are research laboratories, computer centers, military installations, universities and a small number of advanced individuals. These users require the computer muscle of the Turbo Amiga and have the programming expertise to write the custom software they need. The 68020/68881 board can be purchased directly from CSA for \$1,495 retail.

The second alternate processor board is from Netch Computer Products in Monrovia, Calif. Called the 68881 Floating Coprocessor Board, it incorporates a Motorola 68010 with a 68881 chip and is a fairly inexpensive math coprocessor at \$495 retail. The 68010 is not a true 32-bit processor—as is the 68020—but it is essentially software compatible.

You could use this device as an inexpensive 68020/68881 development environment or just utilize the math chip, which provides Amiga owners with a powerful hardware upgrade without

sacrificing a lot of money and software compatibility. The device was compatible with almost all the software and hardware we tried. With the exception of a few Electronic Arts games and the Cardco 1MB RAM card, it worked quite well.

In terms of future coprocessor accessories, Microbotics is planning to offer a multifunction board with a 68881 socket. Version 1.2 of the Amiga system software offers some 68881 support, and more hardware companies will be offering math chips. The combination of the Amiga operating system and third-party hardware support will ensure the availability of commercial software that takes advantage of the extra power offered by the Motorola 68881.

## Expansion Boxes

**E**xpansion boxes give an Amiga the same abilities as an IBM PC, which has a number of built-in (and empty) slots where users who want to upgrade their machines can install new hardware. With a few exceptions, the Amiga requires its upgrades to be external. Originally, the Amiga was to use an 86-pin format, and some earlier equipment uses that design. The newest expansion schemes use what is called the Zorro expansion architecture, a 100-pin connector design.

The only expansion box we could find that was shipping at the time of this writing is the one from The Micro Forge. Called the Seven Slot Expansion Box, it retails for \$656.95 and is designed to be used with Micro Forge's CD20 hard disk drive and stereo digitizer card. We used one of these expansion boxes for a while and found it unsatisfactory. Perhaps it was only this one, but we had problems with both the hard disk drive and the stereo card, both of which worked fine using Micro Forge's Single Slot Adaptor Card. All the slots were the 86-pin format.

There are several other expan-





*PAL Expansion System from Byte by Byte*

sion boxes that should be available by press time. One is from RS Data, maker of the 4MB RAM card. This box will contain two slots and be used for RS Data's RAM cards and, possibly, a hard disk drive controller.

Another expansion system that looks very solid is PAL from Byte By Byte. It's a high-end system with DMA hard disk drive controllers, RAM expansion with a clock/calendar and five slots. It may be the premiere expansion box for some time.

Buss Station from DSI in Wichita, Kan., is said to be a modular expansion system with eight 86-pin connectors. In addition, CSA in San Diego says it will offer an expansion system for its Turbo Amiga board.

## Sound Digitizers

**T**he Amiga's sound capabilities truly set it apart from run-of-the-mill micros and super-micros. It is the first commercial computer to offer speech synthesis as a standard feature, and it has stereo four-voice sound output and a dedicated music chip. This chip is capable of reproducing sound in near CD ROM (compact disc) quality.

Sound digitizers for the Amiga collect and analyze sound via a microphone or line input and convert it to digital data. By using software, a user can recreate the original sound. How well the sound reproduces depends on the original sampling rate, the quality

of the device and the software.

Our favorite sound digitizer is Futuresound from Applied Visions, Medford, Maine. This is a complete system that interfaces to an Amiga via the printer port, with a pass-through connection for a printer. It comes complete with a microphone, interface, good software and decent documentation.

It also comes with working C (executable files and source code on disk) and *AmigaBASIC* routines that enable users to use digital samples in their programs. They can perform multitrack recordings, manipulate sounds by filtering and other more exotic functions. Futuresound accepts line and microphone input. At \$175 retail, it is a good buy and may be the choice digitizer for programmers who need sound effects in their programs.

Another fine digitizer is the Soundscape Sound Digitizer from Mimetics Corporation in Palo Alto, Calif. It's the cheapest system (\$99 retail) and, perhaps, the most professional. Its manual is comprehensive, and the software, while not as user friendly as Futuresound, is very powerful. It even contains examples of programming techniques, but they are not available on disk, only in the manual.

The Soundscape Sound Digitizer is easy to install, connecting to the computer's second mouse port. It accepts both microphone and line input, but users must supply their own microphones. The device is a good value and a quality instrument. Mimetics also makes a MIDI interface for the Amiga that plugs into its serial port. It offers MIDI in, out and through connections and allows an Amiga to communicate with MIDI-capable musical instruments and devices. The interface is available for \$49 retail.

Mimetics also sells a very powerful software system that complements its hardware. It is called the *Pro MIDI Studio* and retails for \$149. While software is outside the scope of this article, it is important to note that Mimetics offers this extra software support



for its sound hardware.

A third sound digitizer is the Stereo Sound Digitizer from The Micro Forge. It is a true stereo digitizer, which means it captures sound from two channels concurrently. The other systems mentioned here do not have that capability. The device interfaces with an Amiga via The Micro Forge's Single Slot Adaptor expansion box.

The Stereo Sound Digitizer consists of a printed circuit board with two line inputs. There is no provision for a direct microphone input, but its included software allows users to digitize sounds in mono or stereo. The device is available from The Micro Forge for \$345 retail.

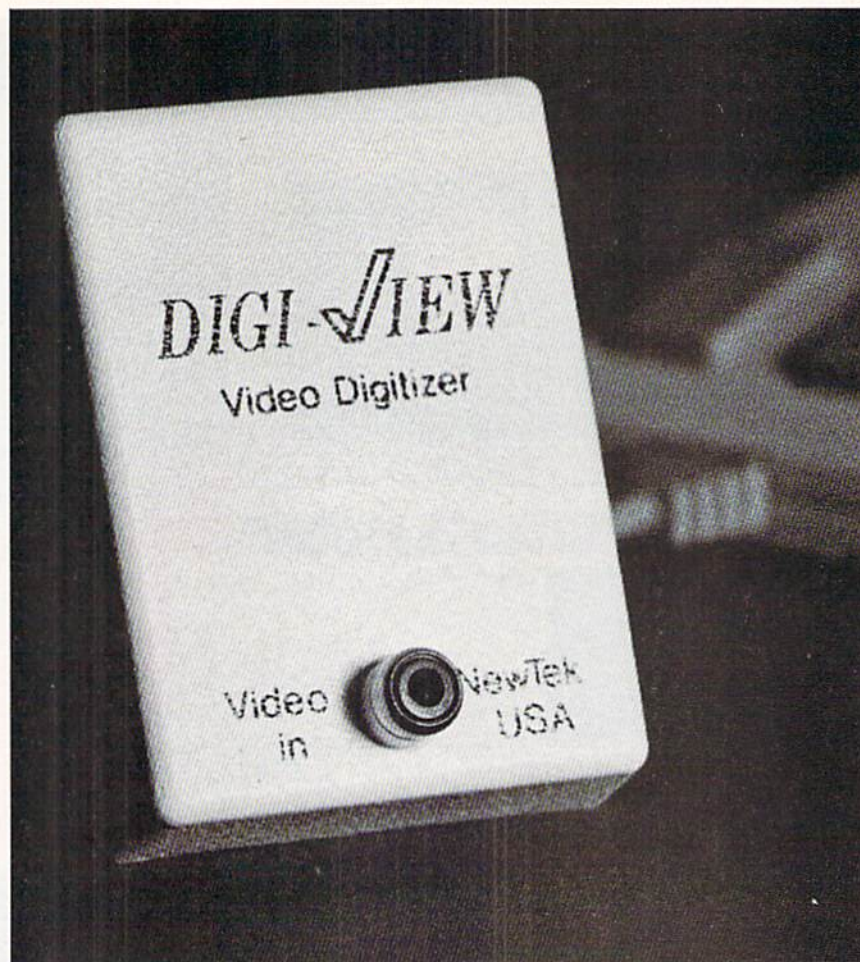
## Graphic Devices

**S**ound is not the only area where the Amiga excels. Graphics is also one of the machine's most outstanding features. Early on, Amiga users were promised a host of high-tech graphic devices. Recently, we were able to look at one such system shipping to the public at this time.

Digiview from NewTek in Topeka, Kan., is one of the neatest things for the Amiga to come down the road in a while. It is a small device that plugs into the computer's printer port and acts as a graphic digitizer. It is not a frame grabber, however, which can snap several frames a second. Digiview requires 10 to 30 seconds to capture its images, so it is useful only for still shots.

What is unique is that it is able to create full-color pictures from a black-and-white camera. Using powerful software techniques, it combines three filtered photographs into one. Then using the Amiga's hold-and-modify mode, it displays the picture using all of the Amiga's 4,096 possible colors.

Digiview also has an interlaced version that uses sophisticated gray shading techniques, which eliminate most of the flicker associated with the interlaced mode. The device comes with software



*Digiview from NewTek*

and instructions, but no camera. A relatively inexpensive black-and-white camera, such as the \$200 (approximately) Panasonic WV-1410, may be used. Digiview itself retails for \$200.

Speaking of frame-grabber devices, we were not able to get the Amiga Live! color frame grabber for this review. We have seen it twice at trade shows, however, we are at a loss as to why it has not yet been marketed. Nor were we able to get a Genlock device.

## Graphic Controllers

**T**here are a couple alternatives to using the mouse as a graphic controller.

One is the Easy! from Anakin Research, Rexdale, Ontario, Canada. It is a standard graphics digitizing pad that can be used for creating original drawings and designs or as a

means of digitizing printed drawings. It retails for \$499.

A second system is the Series One graphics tablet from Kurta Corporation in Phoenix. It is an 8½- by 11-inch graphics tablet. No price was available at press time.

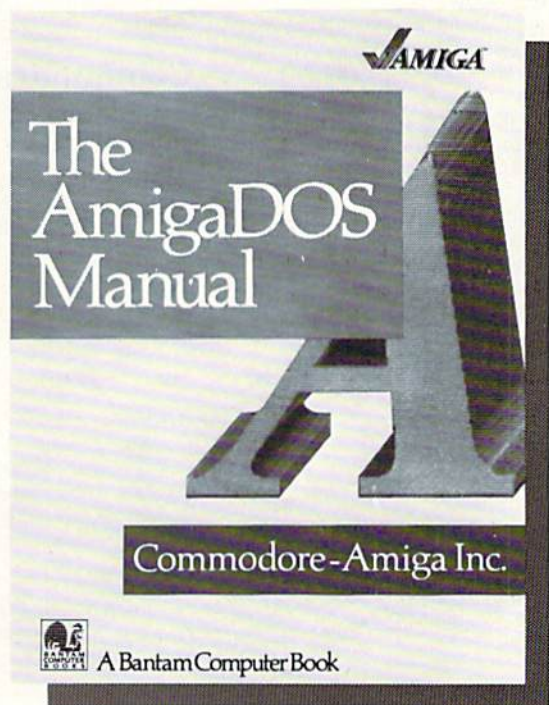
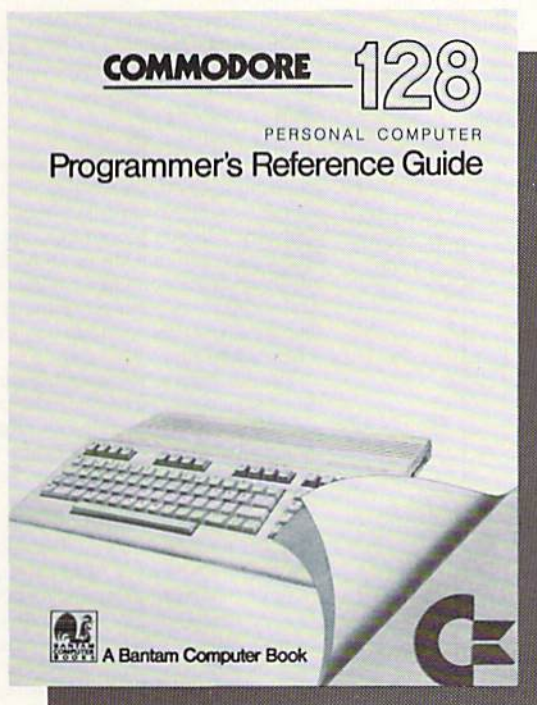
This strong array of new hardware products for the Amiga boosts its memory capacity, speed, power and utility to an admirable and affordable level. An eye-opening number of developers see a potential in the Amiga based solely on the computer's merits, not its manufacturer's name. From all indications, the Amiga is growing into a powerful, versatile, high-quality-oriented machine. ■

—Louis R. Wallace

*The author is a computer specialist and research chemist for the Veteran's Administration and a contributing editor for many computer publications.*



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\$499.50 retail; all three modules

Chang Labs; 5300 Stevens Creek Blvd.; San Jose, Calif. 95129; 408-246-8020

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### Impact

Graphics

Displays numeric data in graphic form.

There are two parts to the program: the first allows a user to create slides of graphs, charts, text and symbols in a free format; the second plays the slides back in a predetermined sequence and fashion.

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Aegis Development; 2210 Wilshire Blvd., Ste. 277; Santa Monica, Calif. 90403; 213-392-9972

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Felsina Software; 3175 S. Hoover St., Ste. 275; Los Angeles, Calif. 90007; 213-747-8498

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A terminal program that allows incoming data to be spoken through the speaker; data to be printed as it is coming over the line; support of protocols; auto-dialing and more.

\$49.95 retail

MegaSoft Limited; PO Box 1080; Battle Ground, Wash. 98604; 800-541-1541 or 206-687-5205

### BBS-PC!

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A versatile electronic bulletin board system that transforms an Amiga into an on-line information network.

\$99.95 retail

Micro-Systems Software, Inc.; 4301-18 Oak Cir.; Boca Raton, Fla. 33431; 305-391-5077 or 800-327-8724

### D.A.S. Communications

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Features include VT100 emulation; support of 110 to 2400 baud; built-in bulletin board system with message base; and upload and download options.

\$30 retail

Developers of Advanced Software; 12455 Veterans Memorial Dr., Ste. 204; Houston, Texas 77014

### Digital Link

File transfer; telecommunications

Enables a user to transfer programs, data and text from IBM PCs, PC-com-

patibles and the Macintosh to the Amiga and back. It also offers full terminal emulation for VT52, VT100, Televideo 925 series, ADM-3A, ANSI and TTY terminals.

\$69.95 retail; *Digital Link*

\$19.95 each retail; cables

Digital Creations; 1333 Howe Ave., #208; Sacramento, Calif. 95825; 916-344-4825

### Genie

Integrated software

An integrated information management/electronic communications application program for computer conferencing and electronic mail in a networked environment.

Available second quarter, 1987

Data Dynamics, Inc.; PO Box 2728; Portland, Ore. 97208; 503-626-4635

### MacroModem

Telecommunications

Simplifies telecommunication sessions by allowing users to create sets of macro commands and companion help screens and direct log-on procedures. For example, one macro can include up to 35 keystrokes—or function-key commands, control codes, text, even other macros—and one keystroke can prepare and execute a terminal session.

Files of macros for each telecommunication service accessed and task performed can be constructed using the program's built-in editor and sample macro templates, and macro sets may be edited while on-line.

*MacroModem* is compatible with an Amiga's multitasking, multiwindow environment. A current terminal-capture file may be displayed as an independent task. On-line conference or electronic messages of up to 10 lines may be prepared and sent from a resizable Compose window, and a user-defined phone directory can store electronic-mail addresses.

\$69.95 retail

Kent Engineering & Design; 4215 Jordan Rd.; PO Box 178; Mottville, N.Y. 13119; 315-685-8237

### MaxiComm

Communications; file transfer utility

An ANSI terminal and file transfer utility program that allows a user to connect an Amiga to public database services, public bulletin boards and another local computer.

\$49.95 retail

MaxiSoft; 2817 Sloat Rd.; Pebble Beach, Calif. 93953; 408-625-4104 or 800-942-6294

### MiddleMan

Terminal emulator

Allows an Amiga to emulate the functions of the DEC VT100 terminal.

\$59.95 retail

Benaiah Computer Products, Inc.; PO Box 11165; Huntsville, Ala. 35814; 205-859-9487



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**Digital Creations**



## Communications Continued

### Online!

#### Telecommunications

A telecommunications program that can transform any Amiga into a terminal capable of interacting with micros and mainframes, so users can exchange information, news and data with other computers.

## Creative

### Aegis Draw

Aegis Development, Inc., see review on page 70

### Amiga Coloring Book

#### Clip art

Each *Amiga Coloring Book* is a one-disk volume of line art containing 20 files that a user can cut and paste to create his own graphics. Volumes include *The Sampler*, *The World and Borders*.

\$34.95 each retail

The Dragon Group, Inc.; 148 Poca Fork Rd.; Elkview, W.Va. 25071; 304-965-5517

### Analytic Art

#### Graphics, pictures

Can be used to produce precise drawings of striking beauty and complexity. Users don't have to understand math, programming or art to develop interesting pictures.

\$59.95 retail

Crystal Rose Software; 109 S. Los Robles; Pasadena, Calif. 91101; 818-795-6664

### Animator

#### Animation package

A metamorphic animation package that uses a concept called "tweening," which allows movement and change within each segment of the animation.

\$139.95 retail

Aegis Development, Inc.; 2210 Wilshire Blvd., Ste. 277; Santa Monica, Calif. 90403; 213-392-9972

### Art Director

Allows a user to create storyboards and layouts, lay out and justify text, experiment with colors and typefaces, create and move artwork and more.

Available second quarter, 1987

Grey Associates; 250 Bruton Way; Atlanta, Ga. 30342; 404-851-9103

### ■ Art Pak, Vol. I

#### Clip art

*Art Paks* consist of precreated art that can be used with *Aegis Images*, *Animator* or *Draw*. Other programs that can read IFF file-formatted paint files can also be used.

*Art Pak, Vol. I* includes photograph-quality artwork of buildings for use as backdrops and pieces of cell animations for creating walking and moving animations. Because *Aegis Animator* can do both metamorphic and cell animations, these images

can be used with both styles.

\$34.95 retail

Aegis Development, Inc.; 2210 Wilshire Blvd., Ste. 277; Santa Monica, Calif. 90403; 213-392-9972

### Bobshop; Soundshop

#### Animation; sound

*Bobshop* is a Blitter-Object and animation editor that exploits the Amiga's custom graphics circuitry.

*Soundshop* exploits the sound production circuitry of the Amiga. Waveforms may be read from files on the disk, displayed on the screen graphically and played through the Amiga's digital to audio converter. It supports the IFF standard for sampled sound data files.

\$49.95 retail; both programs

Revolution Software; PO Box 38; West Chester, Pa. 19381; 215-430-0412

### ■ D'Buddy

#### Creativity set

*D'buddy* is a creativity set that contains a collection of "buddies" that can be used separately or with another tool or program.

*Freeze Frame!* allows a user to instantly grab any screen and place it in an IFF file for use with a *Paint* program or to send to a printer; *PrintIt!* allows a user to print one picture while working on another; *Touchup* is a mini-paint accessory that can be used to touch up a painting or drawing; *Postermaker* blows up any IFF-compatible picture to poster-size dimensions; *Slideshow* creates slideshows of pictures for presentations; *Scissors* is used to clip images from any screen and save them to the Amiga Clipboard or to an IFF file; *Scrapbook* organizes Amiga Clipboard and IFF files; *Colormatch* is used to make the colors of one image match the colors of another image; and *Joymouse* allows a joystick to be used as a mouse.

\$79.95 retail

Digital Creations; 1333 Howe Ave., Ste. 208; Sacramento, Calif. 95825; 916-344-4825

### DeluxePaint

#### Color graphics; drawing; design

A paint program loaded with special features such as zoom enlarging, split-screen magnification, color cycling, blend, smear, stretch, bend and rotate.

\$99.95 retail

Electronic Arts; 1820 Gateway Dr.; San Mateo, Calif. 94404; 415-571-7171

### DeluxeVideo

#### Video production

*DeluxeVideo* can be used to produce video slideshows, point-of-sale videos, animated commercials, business presentation videos, interactive educational videos, animations and home versions of MTV.

\$99.95 retail

Electronic Arts; 1820 Gateway Dr.; San Mateo, Calif. 94404; 415-571-7171

### DNA Music; Protein Music;

#### Fractal Music

#### Sequence mapping

*DNA Music* allows a user to "hear" DNA by mapping a DNA sequence directly into a musical sequence.

*Protein Music* allows a user to "hear" protein by mapping a protein sequence directly into a musical sequence.

*Fractal Music* generates music and synchronized high-resolution graphics based on fractal mathematics.

\$19.95 each retail

Sterling Software; 77 Mead St.; Bridgeport, Conn. 06610; 203-366-7775

### FutureSound

#### Digital sound recorder

*Futuresound* makes it possible to record, play back and store any sound directly on the Amiga. Features include multitrack recording, variable recording speeds and variable playback speeds.

\$175 retail

Applied Visions; 15 Oak Ridge Rd.; Medford, Mass. 02155; 617-488-3602

### Graphicraft

#### Graphics creation

An entry-level graphics design and paint program that features 32 colors and special effects such as color animation.

\$49.95 retail

Commodore Business Machines, Inc.; 1200 Wilson Dr.; West Chester, Pa. 19380; 215-431-9180

### Images

#### Creative

Allows a user to create paintings with as many as 32 different colors. Colors can be mixed and changed on a palette to get the exact colors needed. There are 20 different brushes and 16 patterns available, all of which can be modified for custom designing.

\$79.95 retail

Aegis Development, Inc.; 2210 Wilshire Blvd., Ste. 277; Santa Monica, Calif. 90403; 213-392-9972

### Imagine This

#### Image processing; software development

Image processing software system that turns an Amiga computer into an image processing workstation.

Zoxso; PO Box 283; Lowell, Mass. 01853; 617-655-9548

### ■ Instant Music

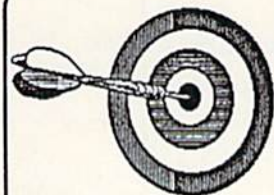
#### Music composition, recording, playback

*Instant Music* allows a user to create his own compositions, record them and play them back.

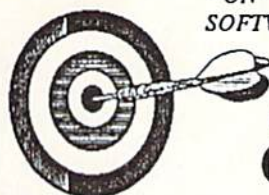
The program keeps a user's creations within musical boundaries, so they always sound good. It does this by introducing a musical "template," which is a set of guidelines that keeps a user within a chosen key and tempo.

*Instant Music* lets a user make music in





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GrabIt	\$23
Graphicraft	\$29
Images	\$52
Instant Music	\$32
Midi Device	\$38
Penmouse	\$287
Sound Digitizer	\$89
Sound Scape Pro	\$125
Zuma Fonts	\$23

## Hardware

Ext. 5.25" Drive w/Trans.	\$174
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2MB RAM Expansion	\$595
A-Time	\$49
Printer - Okidata 292	\$595
Printer - Okidata 20	\$228
Sony KV1331 Mon./TV	\$499
T-Card w/256K RAM	\$589
T-Disk	\$1,193
RF Modulator	\$30
Amiga/Mon./Ram Exp.	call

## Programming & Utilities

BBS PC	\$62
C-64 Emulator	call
DBC 3 Library	\$127
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Lattice "C" Compiler	\$115
Lisp	\$139
Mac Library	\$84
Manx "C" (Developers)	\$203
Modula 2 (Developers)	\$112
Pascal	\$70
Schematics	\$22
Screen Editor	\$85
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## Educational

Discovery Math	\$24
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## Creativity Continued

real time, using a mouse with a method known as "mousejamming." In mousejamming mode, a user plays along with the computer, playing the fourth instrument or voice while the computer plays the other three.

The program comes with more than 80 complete songs to experiment with and more than a dozen digitized instrument sounds to choose from.

A user can adjust the tempo and volume for each voice independently of the others. In addition, the program allows zooming in and out, so a user can view a single measure or the entire song on screen.

A unique color coding of its digitized instruments lets a user see which instrument is doing what, and to follow each individual note as it is played.

Output is saved in IFF files in Simple Music format, making them compatible with other programs such as the *Deluxe Music Construction Set* and *DeluxeVideo*. \$49.95 retail

Electronic Arts; 1820 Gateway Dr.; San Mateo, Calif. 94404; 415-571-7171

## The Music Studio

Music composition

A music program that features stereo composition and MIDI capabilities and includes a complete library of instruments, sound effects and music.

\$59.95 retail

Activision, Inc.; PO Box 7286; Mountain View, Calif. 94039; 415-960-0410

## Pitchrider 1000

MIDI interface

Utilizing IVL's pitch-recognition technology, the *Pitchrider 1000* accepts and then converts sound waves into digital information almost instantaneously.

Using MIDI, it allows a user to utilize MIDI-equipped devices, such as synthesizers and samplers, using monophonic acoustic instruments. This provides access to a full range of synthesizer sounds previously available to keyboard players only.

The *Pitchrider 1000* also enables a user to interact with MIDI software for the Amiga, using his own instrument. It has its own pitch error display, using the Amiga monitor to help a user stay in tune.

\$249 retail

DOD Electronics Corp.; 5639 S. Riley Ln.; Salt Lake City, Utah 84107; 800-453-7484 or 801-268-8400

## Waveform Easel

Allows a user to draw with the mouse a sound table of 256 values to create different sounds and tone qualities.

The program is compatible with the *DNA*, *Protein* and *Fractal* music programs. \$19.95 retail

Sterling Software; 77 Mead St.; Bridgeport, Conn. 06610; 203-366-7775

## Zuma TV\*TXT

A video production tool that enables a user to produce high-resolution, animated video titles on the Amiga.

\$249.95 retail

Brown-Wagh Publishing; 16795 Lark Ave., Ste. 210; Los Gatos, Calif. 95030; 408-395-3838

## Database

### ■ Abase

Database manager

*Abase* provides access to multiple databases and index files from a menu-driven user interface or through a library of routines. It allows multiple tasks to access database files and supports record and file locking.

In addition to giving non-programmers a traditional method of accessing data in different databases, the program gives users the ability to import other database files, such as *Dbase*, and export ASCII files.

Program specifications include a maximum 40 files open at one time (memory permitting), a maximum 10 index files per database (memory permitting), 4,000 bytes maximum record size, 128 fields per record, six field types total and more. Available third quarter, 1986; \$100 retail Computer Power Unlimited; 2014 W. Chandler Ave.; Santa Ana, Calif. 92704; 714-557-3358

### A Filer, A Report

Database

A *Filer* features include creation of disk files; sorting of information; printing out mailing labels; printing out a sorted or partially selected list; 12 fields per record and more. \$49.95 retail

A *Report* features include creation of custom report headings; page numbering; column-type or multiple-line reports; calculation of totals and more. \$49.95 retail MegaSoft Limited; PO Box 1080; Battle Ground, Wash. 98604; 800-541-1541 or 206-687-5205

### Amiga Record Manager

Features include 16 fields with user definable input and length; sorts on any field; arranges into zip code order or alphabetically; prints mailing labels; accounts ledger; and on-line help. \$38 retail

HC Software Australia; GPO Box 2204; Adelaide, South Australia 5001; 08-428377

### DATAMAT

Database manager

A menu-driven relational database management system for micro-to-mainframe applications that has an identical user interface across hardware and operating systems. It currently runs under AmigaDOS, MS-DOS, XENIX, UNIX and VMS. \$495 retail; A300 (AmigaDOS) or MX300 (MS-DOS)

\$350 retail; A200 (AmigaDOS) or MX200 (MS-DOS)

\$125 retail; A100 (AmigaDOS only) Transtime Technologies Corp.; 797 Sheridan Dr.; Tonawanda, N.Y. 14150; 716-874-2010

### The Data System

A full-featured database management package that builds files, reports and lists with posting, totals, subtotals, calculations, etc., all on up to nine conditions.

\$200 retail; without ABasiC

\$210 retail; with ABasiC Gander Software, Ltd.; 3223 Bross Rd., "The Ponds"; Hastings, Mich. 49058; 616-945-2821

### dBMAN

Relational database manager

A *Dbase*-compatible relational database manager that can be used for developing databases and database-related application programs.

\$149 retail

VersaSoft; 4340 Almaden Expressway; San Jose, Calif. 95118; 408-723-9044

### FoxFile

File management

A file manager that will accept up to 65,536 records.

\$50 retail

Foxware; 1554 Park Creek Ln.; Atlanta, Ga. 30319

### InfoBase

Database

A database program that provides many powerful functions. Each record can contain up to 200 fields of information.

\$45 retail

Harvsoft; PO Box 725; Kenmore, N.Y. 14217; 716-877-3510

### MiAmiga File

Database management

A database management system that presents its databases in both list (spreadsheet-like) and form formats. Sorting and selection capabilities are also provided. Up to 32 levels of progressive sorting are supported.

\$99.95 retail

SoftWood Company; PO Box 2280; Santa Barbara, Calif. 93120; 805-966-5884

### ■ Organize!

Custom filing system

*Organize!* helps a user create a custom filing system for organizing business records, contact lists, recipes, etc.

The program features up to 128 fields for each form or record and up to 254 bytes per field, with a maximum of 4,000 bytes per record.

Other features include pull-down menus, mail-merge functions, abbreviated entries for simplified searches, printed reports and more.

\$99.95 retail

Micro-Systems Software, Inc.; 4301-18 Oak



Cir.; Boca Raton, Fla. 33431; 305-391-5077 or 800-327-8724

### ■ Superbase

Database manager

*Superbase* allows business and home users to simplify, control and organize information.

The program is menu-driven and takes advantage of the Amiga's point-and-click and mouse-and-menus environments. It requires no programming, but lets users access its dataBASIC Database Management Language to create custom applications.

*Superbase*, which offers unlimited files, open files, fields per record, sort levels, search criteria, reports and screen formats and more, can work with a RAM disk and supports all standard peripherals, including hard disk drives.

Progressive Peripherals & Software, Inc.; 464 Kalamath St.; Denver, Colo. 80204; 303-825-4144

## Integrated

### ■ Logistix

Project management; database; graphics

*Logistix* is a spreadsheet-based integrated program that incorporates project management, database and graphic functions. It uses *Lotus 1-2-3*-style commands and reads *1-2-3*, *Supercalc*, *Dbase*, *DIF* and many other file formats.

A 1,024-column by 2,048-row work sheet lets users manage information, and a built-in utility allows them to print their spreadsheets straight-up or sideways.

The project-management portion of the program lets users track variables and time units (in half-hour increments) involved in a task. The effects of holidays, vacations, sick days taken by employees or changes in working hours can be graphically displayed. So can the effects of time and schedule changes on resources and cash flow.

Finally, *Logistix* performs critical-path analyses, date arithmetic and what-if and logical operations, as directed by its users. Its presentation-quality graphics program produces more than 20 types of graphs.

\$249.95 retail

Progressive Peripherals & Software, Inc.; 464 Kalamath St.; Denver, Colo. 80204; 303-825-4144

### VIP Professional

VIP Technologies, see review on page 78

## Miscellaneous Management

### Computer Co-Pilot

Assists a user at his communication tasks, while learning about the user and his relation to the world. It maintains a

complete personal database and world model.

Available fourth quarter, 1986; \$900 retail  
Alive Systems Group; PO Box 369; Big Sur, Calif. 93920; 415-332-8018

### D.A.S. Business Finance

Assists business owners in making financial decisions and planning for future business expansion.

\$30 retail

Developers of Advanced Software; 12455 Veterans Memorial Dr., Ste. 204; Houston, Texas 77014

### Gizmoz Productivity Set

Desktop accessories

Contains 18 desktop accessories: calendar, Rolodex, memo pad, black book, calculator set, hot key, free list display, cuckoo alarm clock, terminal package, announcer, graph package, pop-up cards, super life, data compressor and data encryptor.

\$69.95 retail

Digital Creations; 1333 Howe Ave., #208; Sacramento, Calif. 95825; 916-344-4825

### MaxiDesk

Business tools

Comprised of a set of useful business tools, including a calculator, appointment calendar, alarm clock, phone book, keyboard helper and notepad.

\$70 retail

MaxiSoft; 2817 Sloat Rd.; Pebble Beach, Calif. 93953; 408-625-4104 or 800-942-6294

### Time & Task Planner

A time management tool for up to five users that provides each user with a 60-item To Do List; a 60-item Future Planning List; an Appointment Scheduler; a Copy to Scheduler utility; and a Calendar utility.

\$100 retail; without ABasic

\$110 retail; with ABasic

Gander Software, Ltd.; 3223 Bross Rd., "The Ponds"; Hastings, Mich. 49058; 616-945-2821

## Programming

### 3D Graphics Library

Available fourth quarter, 1986

Computer Food, Inc.; 2215 Sarah Ct., Ste. 80H; Norcross, Ga. 30093; 404-851-9103

### A Copier

Nibbler

\$39.95 retail

MegaSoft Limited; PO Box 1080; Battle Ground, Wash. 98604; 800-541-1541 or 206-687-5205

### Advanced String Library

\$49.95 retail

True BASIC, Inc.; 39 S. Main St.; Hanover, N.H. 03755; 603-643-3882

### ■ AEdit

Screen editor

*Aedit* is a general-purpose text editor that places specific emphasis on program text entry. It also handles the day-to-day text entry necessary for practically every function a computer is called upon to perform.

Some features of this program include Overstrike and Insert modes; Writer's and Programmer's modes; a 300-line Undo Buffer, which restores text; Move, Echo, Cut, Copy and Paste commands; an Append mode for storing anything—from one line of text to a full file—at the end of a file already on disk; and more.

The program comes in either a full-featured or limited version. *Aedit Version 2* is the larger model. It features a full set of menus and commands. *Aedit Version 1*, the smaller model, features a smaller command subset. According to its vendor, *Aedit Version 2* is now the preferred version.

\$35 retail

DRM Programs; 1329 Arthur Ave.; Las Vegas, Nev. 89101; 702-457-9489

### Amiga Lattice C Compiler

\$149.95 retail

Lattice, Inc.; PO Box 3072; Glen Ellyn, Ill. 60138; 312-858-7950

### Amiga Lattice dBC III Library

\$150 retail

Lattice, Inc.; PO Box 3072; Glen Ellyn, Ill. 60138; 312-858-7950

### Amiga Lattice MacLibrary

\$100 retail

Lattice, Inc.; PO Box 3072; Glen Ellyn, Ill. 60138; 312-858-7950

### Amiga Lattice Make Utility

\$125 retail

Lattice, Inc.; PO Box 3072; Glen Ellyn, Ill. 60138; 312-858-7950

### Amiga Lattice Screen Editor

\$100 retail

Lattice, Inc.; PO Box 3072; Glen Ellyn, Ill. 60138; 312-858-7950

### Amiga Lattice Text Utilities

\$75 retail

Lattice, Inc.; PO Box 3072; Glen Ellyn, Ill. 60138; 312-858-7950

### Amiga-Lint

Diagnostic facility for C

\$98 retail

Gimpel Software; 3207 Hogarth Ln.; Collegeville, Pa. 19426; 215-584-4261

### Amiga MS-DOS C Cross Compiler

\$250 retail

Lattice, Inc.; PO Box 3072; Glen Ellyn, Ill. 60138; 312-858-7950

### Amiga Panel Forms Manager

\$195 retail

Lattice, Inc.; PO Box 3072; Glen Ellyn, Ill. 60138; 312-858-7950



## Programming Continued

### Amiga Programmer's Library

Software development; file transfers  
\$200 retail  
MaxiSoft; 2817 Sloat Rd.; Pebble Beach,  
Calif. 93953; 408-625-4104 or  
800-942-6294

### ■ APL68000 for the Commodore Amiga

#### Programming

APL68000 provides a friendly environment in which to program in APL. It is available in both a standard APL character-set version and in a keyword version.

Features include a built-in function editor; built-in VT100 APL/ASCII terminal emulation; full Clipboard support for data exchange; pull-down menus; full printer support; runs in its own window; user-defined dialogue and alert boxes; arbitrary I/O via serial ports; a session manager, which allows editing of screen lines; and more.

\$299 retail

Spencer Organization, Inc.; 366 Kinderkamack Rd.; PO Box 248; Westwood, N.J. 07675; 201-666-6011

### Aztec C68k/Am

C software development system

\$249 retail; *Aztec C68k/Am-d*

\$499 retail; *Aztec C68k/Am-c*

Manx Software Systems; PO Box 55; Shrewsbury, N.J. 07701; 800-221-0440 or 201-542-2121

### Commodore-Amiga

Programming languages

\$199.95 retail; *Amiga LISP*

\$149.95 retail; *Amiga C*

\$99.95 retail; *Amiga Pascal*

\$99.95 retail; *Amiga Macro Assembler*

Commodore Business Machines, Inc.; 1200 Wilson Dr.; West Chester, Pa. 19380; 215-431-9180

### ■ cxref

C cross-reference utility

This utility gives programmers information concerning variable declaration and usage.

Command-line arguments allow developers to determine the level of detail contained in their cross-reference listings.

Configuration files provide a way to customize the cross-reference utility for any particular C compiler.

\$49.95 retail

Meta-Soft, Inc.; PO Box 7293; Las Cruces, N.M. 88006; 505-523-0371

### ■ HexDump

*HexDump* allows a user to display and print the contents of any file.

The program's formatted display shows all characters, whether printable or not, and their respective hexadecimal values. The display may be directed to the screen or to a printer.

\$19.95 retail

Northwest Machine Specialties; 3611 Joshua NE; Salem, Oreg. 97305

### Key To C

Developer's package

\$34.95 retail

Data Research Processing, Inc.; 5121

Audrey Dr.; Huntington Beach, Calif.

92649; 714-840-7186

### Metacomco

Programming

\$199.95; *Cambridge LISP*

\$99.95; *ISO Pascal*

\$99.95 retail; *Macro Assembler*

Available October, 1986; *Amiga Shell*

Tenchstar, Inc./Metacomco; 5353 #E Scotts

Valley Dr.; Scotts Valley, Calif. 95066;

408-438-7201

### ■ The Metacomco Toolkit

Programming aids

The *Metacomco Toolkit* consists of several programming tools: Pipes, Librarian, Disassembler, Pack & Unpack, Enlarge, Browse and AUX CLI.

Pipes are a way of connecting output from one program to the input of another program without using cumbersome temporary files.

An Amiga library consists of a series of object modules, each consisting of one or more program units. The Librarian allows inspection and selective updating of the library.

The Disassembler produces a source assembly file from any file output by a compiler, linker or assembler, retaining all of the information in the binary file.

Pack & Unpack allows text files to be condensed and later expanded.

Enlarge produces messages in enlarged format, allowing creation of program headers, titles, etc.

Browse features pausing after each page, searching for strings, advancing through files line by line, rewinding, etc.

AUX CLI allows a second terminal to be connected to the Amiga's serial port and used as an auxiliary CLI, expanding the Amiga into a true multiuser system.

\$49.95 retail

Tenchstar, Inc./Metacomco; 5353 #E Scotts Valley Dr.; Scotts Valley, Calif. 95066; 408-438-7201

### Metadigm Software

Programming tools

\$95 retail; *Metascope: The Debugger*

\$85 retail; *Metascribe: The Editor*

\$69.95 retail; *Metatools I*

Metadigm, Inc.; 19762 MacArthur Blvd., Ste. 300; Irvine, Calif. 92715;

714-955-2555

### The Micro Forge Programming

Programming utilities

\$69.95 retail; *Programmer's Editor*

\$89.95 retail; *Prolog Level 1*

The Micro Forge; 398 Grant St. SE; Atlanta, Ga. 30312; 404-688-9464

### Micro-shell

Programming

\$79.95 retail

Meta-Soft, Inc.; PO Box 7293; Las Cruces, N.M. 88006; 505-523-0371

### Multi-Forth—Amiga Version

Software development

\$179 retail

Creative Solutions, Inc.; 4701 Randolph Rd., Ste. 12; Rockville, Md. 20852; 301-984-0262 or 800-367-8465

### Program Generator

\$400 retail; without ABASIC

\$410 retail; with ABASIC

Gander Software, Ltd.; 3223 Bross Rd., "The Ponds"; Hastings, Mich. 49058; 616-945-2821

### Programmers Toolkit

Available fourth quarter, 1986; \$124.95 retail

MicroDimensions, Inc.; 455 North University Ave., Ste. 206; Provo, Utah 84601; 801-377-0933

### ■ Screen Mapper

*Screen Mapper* contains programs that allow a user to design and use multifield screens.

One program allows a user to design the screen as it would look when in use; another can be used as a subroutine to display information in variable fields and allow entry in those fields.

The subroutine will do all of the input/output functions from and to the screen. When the subroutine is in control, a user can skip from field to field and enter only the class of characters legal for that field (alpha or numeric, etc.).

\$89.95 retail

Northwest Machine Specialties; 3611 Joshua NE; Salem, Oreg. 97305

### Sorting & Searching

\$49.95 retail

True BASIC, Inc.; 39 S. Main St.; Hanover, N.H. 03755; 603-643-3882

### Sprite/Graphics Editors

\$50 retail

Scott Lamb; 205C Heights Ln.; Ft. Worth, Texas 76112; 817-496-9220

### ■ TDI Modula-2

Programming language

*TDI Modula-2* is a programming language designed to make it easier to conceive, write and maintain software.

The Regular Version of the program features a desktop that presents *Modula-2* files as icons and automates the edit/compile/link cycle; a desk accessory to set directory search paths, heap size of a program and several other linker and compiler options; an enhanced editor with global search and replace, the ability to set and jump to markers, auto indent options, keyboard macros and more; an optimization pass in the linker that removes all uncalled



procedures and reduces code size; the ability to write desktop accessories with *Modula-2*; modules for full Atari BIOS (basic input/output system) and XBIOS interfaces; and more.

The Developer's Version includes a symbolic debugger that presents programs in symbolic form and uses GEM multiwindows, a high-level GEM application library, source-file cross-referencer, link and code-file disassembler, symbol file decoder, the source code for a RAM disk driver and printer spooler in *Modula-2* and more. \$89.95 retail; Regular Version \$149.95 retail; Developer's Version TDI Software, Inc.; 10410 Markison Rd.; Dallas, Texas 75238; 214-340-4942

#### **TxEd**

Text editor  
\$59.95 retail  
Microsmiths, Inc.; PO Box 561; Cambridge, Mass. 02140; 617-576-2878

#### **True BASIC Language System**

\$149.90 retail  
True BASIC, Inc.; 39 S. Main St.; Hanover, N.H. 03755; 603-643-3882

#### **True BASIC Runtime Package**

Application development  
The *Runtime Package* contains everything needed to create a stand-alone application. The *Language System* is used for develop-

ment, and the *Runtime Package* links a user's main program and external libraries with the *Runtime* module to produce a self-contained "clickable" program.

The *Runtime Package* reduces the memory required to run programs, speeds up loading and start-up time and gives a user the same execution speed as the *Language System*. No syntax changes are necessary. \$150 retail; non-commercial licensing \$500 retail; unlimited commercial licensing True BASIC, Inc.; 39 S. Main St.; Hanover, N.H. 03755; 603-643-3882

#### **ZLI**

Line interpreter  
\$49.95 retail  
Zoxso; PO Box 283; Lowell, Mass. 01853; 617-655-9548

### **Specific Application**

#### **3-D Graphics Library**

Three-dimensional graphics  
The *3-D Graphics Library* allows a user to create three-dimensional images. \$49.95 retail  
True BASIC, Inc.; 39 S. Main St.; Hanover, N.H. 03755; 603-643-3882

#### **Digital Building System**

Graphically simulates digital electronic

circuits on the Amiga's hi-res screen.

Standard schematic, logic and integrated circuit symbols are used to build the circuit on the screen using the mouse or keyboard to move parts around.

\$299 retail

MicroMaster Software; 1289 Brodhead Rd.; Monaca, Pa. 15061; 412-775-3000

#### **Dynamic-CAD**

Computer-aided design

A two-dimensional drafting system with isometric capabilities that can be combined with many models of printers, plotters and digitizers.

\$495 retail

MicroIllusions; PO Box 3475; Granada Hills, Calif. 91344; 818-360-3715

#### **ES5C Calculator**

Programmable scientific calculator

A software module that emulates a programmable scientific calculator. It resides in its own window and can run concurrently with other applications. Emusoft Corp.; 1400 Chicago Ave., Ste. 303; Evanston, Ill. 60201; 312-869-6676

#### **The Film Production Toolkit**

Scheduling and budgeting motion pictures

Designed to aid directors, production managers and assistant directors.

The program is written in the C programming language, and is designed to

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## Specific Application Continued

connect with a series of building blocks that will interface the program's scheduling and budgeting programs.

The system includes a Wizard feature that answers what-if questions about any planned or unplanned circumstances a producer may encounter.

\$1,500 retail

Film Production Toolkits; 3114 Fifth St.; Santa Monica, Calif. 90405; 213-396-1199

## Grade Manager

Gradebook and statistics

Allows for the entry of any type of grade entry with full category weighting and renaming, automatic conversion of grades to a true 100-point scale and after-the-fact grade maintenance.

\$89.95 retail

Associated Computer Services; 1306 E. Sunshine; Springfield, Mo. 65804; 417-887-7373

## Lionheart Business Software

Business-analysis books with software

\$145 retail; *Business Statistics*

\$145 retail; *Experimental Statistics*

\$150 retail; *Multivariate Analysis*

\$145 retail; *Forecasting and Time Series*

\$150 retail; *Sales and Market Forecasting*

\$110 retail; *Decision Analysis Techniques*

\$95 retail; *Linear and Non-linear*

*Programming*

\$95 retail; *Pert and Critical Path Techniques*

\$110 retail; *Optimization*

\$75 retail; *Exploratory Data Analysis*

\$145 retail; *Quality Control and Industrial Experiments*

\$150 retail; *Statistics for Marketing*

\$125 retail; *Monte Carlo Simulations*

Lionheart Press; PO Box 329; Alburg, Vt. 05440; 514-933-4918

## LogicWorks

Integrated logic design

A tool that contains schematic diagram entry and simulation capabilities, user-definable macro devices, PROM and PLA support and interactive operation.

\$199.95 retail

Capilano Computing Systems, Ltd.; PO Box 86971; N. Vancouver, B.C., Canada V7L 4P6; 604-669-6343

## PCLO

Printed circuit-board layout

A multiple-layer, interactive auto-routing CAD tool for engineers and technicians who want complete control over their printed circuit-board artwork.

\$1,024 retail

\$75 retail; demo

SoftCircuits, Inc.; 401 SW 75th Terrace; North Lauderdale, Fla. 33068; 305-721-2707

## Quiz Master

Music

Allows a teacher to create and give tests or quizzes directly on the computer. Two

additional support packages, *Music Student I and II*, take the student through all major areas of music theory such as symbol recognition, scales, chords, etc.

\$79.95 retail; *Quiz Master*

\$49.95 retail; *Music Student I and II*

Associated Computer Services; 1306 E.

Sunshine; Springfield, Mo. 65804;

417-887-7373

## SciCalc

Scientific calculator

A full-featured scientific calculator. Features include algebraic hierarchy with automatic constant, 10 memories, powers, logs, trig, hyperbolics, statistics and polar/rectangular conversion.

\$14.95 retail

DESKWARE; PO Box 47577; St. Petersburg, Fla. 33743

## Station Manager

A full-featured television station management system. The first module to be completed is the weather graphics system.

Additional modules will be available to handle interoffice mail, teleprompting, downloading from news and weather services and production of news "copy." This will link together all newsroom services.

\$1,995 retail; *Station Manager*

\$995 retail; *Station Manager Weather*

*Graphics*

Associated Computer Services; 1306 E.

Sunshine; Springfield, Mo. 65804;

417-887-7373

## Spreadsheets

### Amiga Unicalc Spreadsheet

An electronic spreadsheet that provides a 256-column by 1,024-row processing area.

\$79.95 retail

Lattice, Inc.; PO Box 3072; Glen Ellyn, Ill. 60138; 312-858-7950

### Analyze!

Spreadsheet

A spreadsheet program that provides a 256-column by 8,156-row processing area.

\$99.95 retail

Micro-Systems Software, Inc.; 4301-18 Oak Cir.; Boca Raton, Fla. 33431; 305-391-5077 or 800-327-8724

### ■BTS

Spreadsheet

BTS is a spreadsheet program that contains a maximum work-sheet size of 1,000 rows by 1,000 columns.

The program features math, statistic and financial functions; the logical operators And, True and False; standard formatting options; variable column widths with counter; a sparse matrix storage method; automatic or manually selected calculations; calculations by row or column; shows values or formulas in each cell; protects an entire spreadsheet file or selected portions; and more.

\$69.95 U.S. retail; \$99.95 Canada retail  
Batteries Included; 30 Mural St.; Richmond Hill, Ontario, Canada L4B 1B5; 416-881-9816

## MaxiPlan

Spreadsheet

A spreadsheet, graphics and database program that provides a 512-column by 16,384-row processing area and what-if analysis with numerical data.

\$150 retail

MaxiSoft; 2817 Sloat Rd.; Pebble Beach, Calif. 93953; 408-625-4104 or 800-942-6294

## Utilities

### A Disk

Two-drive emulator

A two-drive emulator that allows a user to load and run programs without continually swapping the Workbench disk.

\$29.95 retail

MegaSoft Limited; PO Box 1080; Battle Ground, Wash. 98604; 800-541-1541 or 206-687-5205

### Clock For Amiga

Utility

A small cartridge that plugs onto the side of the Amiga. The time of day is set automatically each time the computer is turned on, and the clock will run for two years even when the Amiga is turned off.

\$69.95 retail

Skyles Electric Works, Inc.; 231-E S. Whisman Rd.; Mountain View, Calif. 94041; 800-227-9998 or 415-965-1735

### D.A.S. Disk Editor

Utility

A utility program that allows a user to change any byte(s) on a disk and display sectors in Hex, Octal, ASCII and Decimal format.

\$20 retail

Developers of Advanced Software; 12455 Veterans Memorial Dr., Ste. 204; Houston, Texas 77014

### Deluxe Print

Color printing program

Contains 15 formats for creating a variety of customized printouts, in either color or black and white.

\$99.95 retail

Electronic Arts; 1820 Gateway Dr.; San Mateo, Calif. 94404; 415-571-7171

### Disk Library

Provides a way to organize the contents of a disk for easy access.

\$49.95 retail

Classic Image, Inc.; 510 Rhode Island Ave.; Cherry Hill, N.J. 08002; 609-667-2526

### Disk Traffic Controller

File/drawer/disk database



Computer Food, Inc.; 2215 Sarah Ct., Ste. 80H; Norcross, Ga. 30093; 404-851-9103

#### **Diskwik**

Disk utility package

Gives a user total access and control of his disks. Features include restoring deleted files; eliminating any errors on a disk (except those due to defective disks); editing in hex or ASCII; copying blocks to the same or another disk; reformatting tracks; correcting checksums; and more.

\$49.95 retail

Tigress; PO Box 665; Glendora, Calif. 91740; 818-334-0709

#### **DOS-2-DOS**

File transfer

DOS-2-DOS transfers all file types from MS-DOS/PC-DOS to AmigaDOS and vice versa.

Features include selection of a desired MS-DOS/PC-DOS subdirectory, displays a sorted directory listing of a current subdirectory with disk-usage statistics, supports full directory path names, provides duplicate file-name detection with query/replace options, permits renaming of files where file-name restrictions occur, offers type and delete commands and remains resident to permit AmigaDOS disk swapping.

\$55 retail

Central Coast Software; 268 Bowie Dr.; Los Osos, Calif. 93402; 805-528-4906

#### **InfoMinder**

Information resource

An information resource program that allows a user to access stored data.

The program consists of three parts: an access/display program, a text compiler and a programmer's interface.

\$89.95 retail

Byte By Byte; Arboretum Plaza II; 9442 Capital of Texas Hwy. N., Ste. 150; Austin, Texas 78759; 512-343-4357

#### **LaserUp! Graphics**

Printer utility

LaserUp! Graphics allows a user to print virtually any Amiga screen on an Apple Laserwriter printer.

The program allows a user to load and display any IFF-formatted picture, and print all or any portion of it at any scale and at any place on a page.

A user has complete control of halftone screen types, independent X and Y scaling and positioning on the page.

All files are saved as Postscript images.

\$79.95 retail

S. Anthony Studios; 889 De Haro St.; San Francisco, Calif. 94107; 415-826-6193

#### **LaserUtilities Vol. 1**

A collection of Postscript procedures for formatting text on the Laserwriter.

\$39.95 retail

S. Anthony Studios; 889 De Haro St.; San Francisco, Calif. 94107; 415-826-6193

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### Utilities Continued

#### ■lpr

Line-printing spooler

Similar to the UNIX line-printing spooler utility, *lpr* outputs files to a user-defined port.

A configuration file allows the user to tell the utility about print parameters such as pagination and page headers.

Command-line arguments may also be used to override or add other information to the output.

Available January, 1987; \$59.95 estimated retail

Meta-Soft, Inc.; PO Box 7293; Las Cruces, N.M. 88006; 505-523-0371

#### Maxipower Series

Utilities

*Maximizer* is a mouse/keyboard record and playback program.

*Maxicache* is a floppy disk performance enhancement that allows a floppy to work faster than a hard disk.

*Maxikey* is an abbreviation handler for word processing and programming.

*Maxishare* is a real-time data sharing program using two Amigas.

\$29.95 each retail

MaxiSoft; 2817 Sloat Rd.; Pebble Beach, Calif. 93953; 408-625-4104 or 800-942-6294

#### The On-line AmigaBASIC Manual

On-line help utility

An on-line help utility program that includes pull-down menus for help on all the BASIC instructions.

Available January, 1987; \$29.95 retail; not copy-protected

Omega Star Software; PO Box 1831; Clemson, S.C. 29633; 803-882-3602

#### Pick Your Preferences

Start-up file

An auto-running start-up file that presents a user with a menu that lists the available preference settings on a disk.

\$29.95 retail

MicroMaster Software; 1289 Brodhead Rd.; Monaca, Pa. 15061; 412-775-3000

#### RAM Disk

Memory partitioning utility

Gives high-speed capabilities to users of the Workbench interface.

The Micro Forge; 398 Grant St. SE; Atlanta, Ga. 30312; 404-688-9464

#### T-Util

File recovery

Consists of four programs: *Recover-All*, *Recover-Deleted*, *Un-Kill* and *Diskedit*. These files are designed to run from the CLI environment, and instructions are provided in the manual for users who are not familiar with CLI.

\$49.95 retail

Techni Soft; PO Box 7175; 5505 Walden Meadows Dr.; Murray, Utah 84123; 801-268-4961

#### ■VLI

Operating shell

*VLI* is an operating shell that is a cross between the Workbench and CLI.

All *CLI* commands are available with the use of the mouse. Files in the current directory are displayed and can be selected for any *CLI* operation.

Available fourth quarter, 1986

Computer Food, Inc.; 2215 Sarah Ct., Ste. 80H; Norcross, Ga. 30093; 404-851-9103

#### ■ZING!

Productivity software

*Zing!* allows a user to bypass typing cryptic commands through CLI. With the program, a user can copy, edit, delete, rename, sort, search and organize files and programs using the mouse.

Screens can be saved to standard IFF files or to a printer. A user can monitor and control running tasks and interface with other software applications.

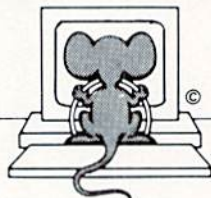
Other features include a built-in screen dimmer during periods of inactivity.

*Zing!* does not sacrifice memory, disk space or prevent a user from running other applications simultaneously.

\$79.95 retail

Meridian Software, Inc.; PO Box 890408; Houston, Texas 77289; 713-488-2144

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## Word Processing

### E.T. Writer

Turns an Amiga computer and printer into a full-featured electronic typewriter or standard word processor.

Available first quarter, 1987; \$49.95 retail  
T.R. Software; 4346 W. Maypole; Chicago, Ill. 60624; 312-875-9760

### Flow

Idea processor

A tool that assists in creating sales reports, school papers and novels; helps plan business strategies and schedule appointments; and organizes thoughts and ideas.

\$99.95 retail

New Horizons Software, Inc.; PO Box 43167; Austin, Texas 78745; 512-280-0319

### ■ Illusion Fonts #1

System fonts and utilities

*Illusion Fonts #1* is a library of system utilities and accessories that contains a set of various fonts and font-handling utilities.

Features include 10 complete custom-made, high-quality fonts including serif, sans serif and decorative fonts; multiple font sizes from eight to 21 points; and a font-mover utility. The program is not copy-protected.

*Illusion Fonts #1* is compatible with *Deluxe Paint*, *Deluxe Video*, *Notepad* and other programs conforming to Amiga font standards.

\$24.95 retail

Illusion Software; 6546 Hollywood Blvd., Ste. 201; Hollywood, Calif. 90028; 213-464-8381

### LaserFonts Vol. 1

A collection of three downloadable analytic (not bit-mapped) fonts for the Laserwriter printer.

\$39.95 retail

S. Anthony Studios; 889 De Haro St.; San Francisco, Calif. 94107; 415-826-6193

### Nancy

Spelling checker and utilities

A spelling checker with a compressed dictionary file containing more than 80,000 words. It can search up to four user-supplied word lists of unlimited length which can, for example, hold names and technical words.

\$60 retail

The Computer Club; 4843A S. 28th St.; Arlington, Va. 22206; 703-998-7588

### ■ ProWrite

Word processor

*ProWrite* is a word processor that allows a user to edit and print in different fonts, styles and colors.

*ProWrite* supports all printers that have Amiga printer drivers. Only graphics-capable printers can print in the font used

on screen, however, and only color-capable printers can utilize the program's color-printing capabilities.

Multitasking is fully supported.

Available January, 1987; \$124.95 retail  
New Horizons Software, Inc.; PO Box 43167; Austin, Texas 78745; 512-280-0319

### Scribble!

Word processor

A full-featured word processor that contains a 40,000-word spelling checker, basic word processing capabilities and advanced features.

\$99.95 retail

Micro-Systems Software, Inc.; 4301-18 Oak Cir.; Boca Raton, Fla. 33431; 305-391-5077 or 800-327-8724

### Talker

Talking word processor

An easy-to-use word processor that speaks as a user types. It includes all standard word processor features such as word wrap, margin setting, bold, italic and underlined text.

\$69.96 retail

Finally Software; 4000 MacArthur Blvd., Ste. 3000; Newport Beach, Calif. 92663; 714-854-4434

### Textcraft

Word processing

An entry-level word processor that stresses ease of use, on-screen documentation and templates for business letters, memos, etc.

\$99.95 retail

Commodore Business Machines, Inc.; 1200 Wilson Dr.; West Chester, Pa. 19380; 215-431-9180

### ■ Thunder! The Writer's Assistant

Word processing

*Thunder!* contains three timesaving accessories that work within application programs to increase productivity: Spelling Checker, Abbreviations Expander and Document Analyzer.

The Spelling Checker contains a 50,000-word dictionary, works in real-time mode to instantly identify errors as a user types and more.

The Abbreviations Expander saves a user time entering commonly used items.

The Document Analyzer displays a statistical report, including number of words, average sentence length and more.

\$39.95 retail

Batteries Included; 30 Mural St.; Richmond Hill, Ontario, Canada L4B 1B5; 416-881-9816

### Wordwright

Word processing

A word processor that can handle large text files and is oriented to the user who wants total control over the way text is printed.

\$75 retail

RTL Programming Aids; 10844 Deerwood SE; Lowell, Mich. 49331; 616-897-5672

### Write Hand

Word processor

A full-featured word processor that includes extensive on-line help, form letter generation, mail merge, automatic document backup, time/date stamp, conditional page breaks, custom printer configuration, block graphics, viewing of multiple documents during edit and more.

\$50 retail

Byte By Byte; Arboretum Plaza II; 9442 Capital of Texas Hwy. N., Ste. 150; Austin, Texas 78759; 512-343-4357

### Zuma Fonts

Video; presentation graphics

Designed for use in video and presentation graphics applications. Each of the volumes contains font sizes ranging from 20 to 100 points for screen resolutions of 320 x 200, 640 x 200 and 640 x 400.

\$34.95 per volume retail

Brown-Wagh Publishing; 16795 Lark Ave., Ste. 210; Los Gatos, Calif. 95030; 408-395-3838

## Personal And Home Software

## Education

### Analogies I And II

\$65 each retail

Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

### Comprehensive Grammar Review I And II

\$54.95 each retail

Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

### ■ Conversation With A Computer

Logic games and Amiga Basic programming guide

\$29.50 retail

Jenday Software; PO Box 4313; Garden Grove, Calif. 92642; 714-636-3378

### Discovery

Interactive educational space adventure

Through the mastering of mathematical and spelling challenges a user explores and repairs the inner workings of the spaceship *Discovery*.

\$39.95 retail

MicroIllusions; PO Box 3475; Granada Hills, Calif. 91344; 818-360-3715

### ■ Equation Plotter

Educational aid

*Equation Plotter* is designed to be used as an educational aid by junior high, high



### Education Continued

school and even advanced college students.

Classroom teachers can also benefit from the program's ability to let them draw graphs in the X and Y plane, compare mathematical functions, find solutions of equations graphically, locate maxima and minima of functions and more.

**Equation Plotter** accepts user-defined mathematical functions, or a user can select from a generalized library of equation types.

A user can optionally decide to view one or two curves, the latter enabling detailed comparisons of equation types. Additional options turn grid lines on or off and will repeat the current display, with a change of scale in either or both the X or Y axes. \$29.95 retail  
Scientific Software; PO Box 202; Rexford, N.Y. 12148

### ■First Shapes

Basic geometric shapes

**First Shapes** teaches young children, ages three to eight, beginning concepts about shape and form through a talking friend, Ted E. Bear. It helps to increase a child's readiness for mathematics, reading, writing and problem solving.

Learning modules include Shapes, which teaches five basic shapes; The Toy Factory,

which allows a child to build toys with shapes; The Toy Boxes, to store created toys; The Toy Fair, which teaches shape recognition; and Make-a-Match, which matches shapes and toys.

\$49.95 retail

First Byte, Inc.; 2845 Temple Ave.; Long Beach, Calif. 90806; 213-595-7006

### French And Spanish Grammar

\$34.95 each retail; *French Grammar I, Spanish Grammar I, II, III*  
Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

### Geography

\$59.95 each retail; *U.S. Geography Adventure, World Geography Adventure I, II, III, IV*  
Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

### The Halley Project: A Mission In Our Solar System

Mindscape, Inc., see review on page 71

### History

\$59.95 each retail; *American History Adventure, How A Bill Becomes A Law, World History Adventure*  
Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

### Keyboard Cadet

Typing instruction  
\$39.95 retail  
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, Ill. 60062; 800-221-9884 or 800-942-7315 in Ill.

### KidTalk

Reading, writing instruction  
An educational program with built-in speech capabilities that can help children in preschool through sixth grade improve their reading and writing.  
\$59.95 retail  
First Byte, Inc.; 2845 Temple Ave.; Long Beach, Calif. 90806; 213-595-7006

### Lessons In Reading And Reasoning

\$39.95 each retail; *Lessons I, II, III*  
\$59.95 retail; *Lesson IV*  
\$149.95 retail; Entire package  
Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

### MasterType

Typing tutor  
\$39.95 retail  
Scarborough Systems, Inc.; 55 S. Broadway; Tarrytown, N.Y. 10591; 914-332-4545

### ■MathTalk

Mathematics  
*Mathtalk* is a mathematics learning tool

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with built-in speech that helps increase a child's (primary through elementary grades) ability to solve basic addition, subtraction, multiplication and division problems.

Learning modules include Math Book, which allows a child to enter his own problems and receive individualized tutorial help; Whiz, which keeps children in control, letting them move at their own pace; Scores, which keeps a record of each child's test and game scores; Tabletalk, which teaches math tables; and Mystery Number, which allows a child to solve simple math equations with missing numbers. \$59.95 retail  
First Byte, Inc.; 2845 Temple Ave.; Long Beach, Calif. 90806; 213-595-7006

#### ■MicroEd Educational Programs

Microed, Inc. offers a series of educational programs that range from reading to history. All programs use the Amiga voice. \$29.95 each retail; *Beginning Reading One* through *Four*  
\$29.95 each retail; *Spelling Level Two* through *Six*  
\$29.95 each retail; *Capitalization, Punctuation*  
\$29.95 retail; *Social Studies Vocabulary* (elementary)  
\$49.95 retail; *Vocabulary Series* (high school level)  
\$29.95 retail; *Basic Grammar*  
\$29.95 retail; *Word Demons*  
\$39.95 retail; *The Spelling Detective Game*  
\$89.95 retail; *The Lewis and Clark Expedition*  
\$59.95 retail; *Across the Plains*  
\$79.95 retail; *Fur Trade of the Great Lakes*  
\$79.95 retail; *Making Our Constitution*  
MicroEd, Inc.; PO Box 444005; Eden Prairie, Minn. 55344; 612-944-8750

#### Paraclete

Music aid  
\$89.95 retail  
Associated Computer Services; 1306 E. Sunshine; Springfield, Mo. 65804;  
417-887-7373

#### Practical Composition And Sentence Completion

\$44.95 retail; *Practical Composition I: Making Words Work*  
\$54.95 retail; *Practical Composition II: Logical, Clear Sentences*  
\$44.95 retail; *Practical Composition III: Selecting The Best Approach*  
\$44.95 retail; *Practical Composition IV: Making Sentences Work*  
\$44.95 retail; *Practical Composition V: Using Words Correctly*  
\$144.95 retail; *Practical Composition Package I*; includes *Practical Composition I, II and III*  
\$85 retail; *Practical Composition Package II*; includes *Practical Composition IV and V*  
\$44.95 retail; *Sentence Completion*  
Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

#### Reading

\$65 retail; *College Aptitude Reading Comprehension Exercises*  
\$39.95 retail; *Reading Adventure I*  
\$59.95 each retail; *Reading Adventure II, III*  
\$54.95 each retail; *Reading and Thinking I, II, III*  
Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

#### ■Senior Tutor

Conversational Spanish tutor  
*Senior Tutor* is a program that speaks and teaches Spanish.

Lessons include greetings and phrases, around the house, a trip to the market, finding your way around and more.

Lessons change so that a user never sees the same one twice, and variable quizzes help monitor progress.

\$69.96 retail  
Finally Software; 4000 MacArthur Blvd., Ste. 3000; Newport Beach, Calif. 92663;  
714-854-4434

#### Speller Bee

Spelling instruction  
An educational program with built-in speech capabilities that can help children in preschool through sixth grade improve their spelling skills.  
\$59.95 retail  
First Byte, Inc.; 2845 Temple Ave.; Long Beach, Calif. 90806; 213-595-7006

#### Starting A New Business

Simulation game  
\$59.95 retail  
Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

#### ■The Surgeon

Simulation game  
*The Surgeon* is a simulation game of a real-life operation on a disease called aortic aneurysm.

The program includes all of the complications that can occur in a surgical operation, such as abnormal electrocardiographic wave patterns, a drop in blood pressure and complications from incorrect procedures.

The program can be used to understand the parts of the human body, medical terminologies and surgical operations.

\$60 retail  
ISM, Inc.; 2936 Paper Mill Rd.; Phoenix, Md. 21131; 301-666-2672

#### True BASIC Educational Software

\$49.95 each retail; *Algebra, Pre-Calculus, Calculus, Chance, Discrete Math, Trigonometry*  
True BASIC, Inc.; 39 S. Main St.; Hanover, N.H. 03755; 603-643-3882

#### Typing Tutor And Word Invaders

Typing instruction  
\$34.95 retail  
Academy Software, Inc.; PO Box 6277; San Rafael, Calif. 94903; 415-499-0850

#### Unicorn Educational Software

\$49.95 each retail; *Decimal Dungeon, Fraction Action, Math Wizard, Animal Kingdom, Read and Rhyme, Kinderama*  
Unicorn Software Co.; 2950 E. Flamingo Rd.; Las Vegas, Nev. 89121; 702-737-8862

#### Vocabulary

\$34.95 retail; *Antonyms*  
\$54.95 retail; *Practical Vocabulary*  
\$59.95 each retail; *Vocabulary Adventure I, II, III*  
\$39.95 retail; *How To Spell*  
Intellectual Software, a division of Queue, Inc.; 562 Boston Ave.; Bridgeport, Conn. 06610; 800-232-2224

## Games And Entertainment

#### Activision Games

\$44.95 each retail; *Hacker, Hacker II: The Doomsday Papers, Mindshadow, Borrowed Time, Shanghai, Tass Times in Tonetown*  
\$49.95 retail; *The Activision Little Computer People Discovery Kit*  
Activision, Inc.; PO Box 7286; Mountain View, Calif. 94039; 415-960-0410

#### ■Aldaron

Reversi board game  
\$39.95 retail  
Microsmiths, Inc.; PO Box 561; Cambridge, Mass. 02140; 617-576-2878

#### ■Arazok's Tomb

Adventure, role-playing game  
\$49.95 retail  
Aegis Development, Inc.; 2210 Wilshire Blvd., Ste. 277; Santa Monica, Calif. 90403; 213-392-9972

#### Bowling

Action game  
\$19.95 retail  
Sterling Software; 77 Mead St.; Bridgeport, Conn. 06610; 203-366-7775

#### ■Chess & Checkers

Strategy games  
\$39.95 retail  
Point Software Development, Inc.; PO Box 1946; Huntsville, Ala. 35807; 205-350-5511

#### Chessmate 1.1

Computerized chess game  
\$29.95 retail  
Dark Horse; 3117 Freeman Mill Rd.; Greensboro, N.C. 27406; 919-292-3979

#### ■The Chessmaster 2000; Software Golden Oldies Volume 1

Strategy; entertainment  
\$44.95 retail; *The Chessmaster 2000*  
\$34.95 retail; *Software Golden Oldies Volume 1*  
The Software Toolworks; 9713 Santa Monica Blvd., Ste. 204; Beverly Hills, Calif. 90210; 213-278-8450



## Games And Entertainment Continued

### ■ Computer Baseball

Sports game  
\$39.95 retail  
Strategic Simulations, Inc.; 1046 N. Rengstorff Ave.; Mountain View, Calif. 94043; 415-964-1200

### Diablo

Maze-like, arcade-style game  
\$29.95 retail  
Classic Image, Inc.; 510 Rhode Island Ave.; Cherry Hill, N.J. 08002; 609-667-2526

### Dr. Xes

Psychotherapeutic game  
\$49.96 retail  
Finally Software; 4000 MacArthur Blvd., Ste. 3000; Newport Beach, Calif. 92663; 714-854-4434

### Electronic Arts Games

\$39.95 each retail; *Archon, Dr. J and Larry Bird Go One-On-One, Skyfox, Arcticfox, Return To Atlantis*  
\$49.95 retail; *Adventure Construction Set*  
Electronic Arts; 1820 Gateway Dr.; San Mateo, Calif. 94404; 415-571-7171

### ■ Epyx Games

Strategy  
*Temple of Apshai Trilogy, Rogue, Winter Games*

Epyx, Inc.; 1043 Kiel Ct.; Sunnyvale, Calif. 94089; 408-745-0700

### ■ The Faery Tale Adventure

Adventure game  
\$49.95 retail  
MicroIllusions; PO Box 3475; Granada Hills, Calif. 91344; 818-360-3715

### ■ Flight Simulator II

\$49.95 retail  
Sublogic Corp.; 713 Edgebrook Dr.; Champaign, Ill. 61820; 217-359-8482

### ■ Games Gallery I, II And III

Classic computer games  
\$29.95 each retail  
Meridian Software, Inc.; PO Box 890408; Houston, Texas 77289; 713-488-2144

### Gamestar Games

Sport simulations  
\$54.95 retail; *Championship Golf: The Great Courses Of The World, Vol. I Pebble Beach*  
\$44.95 each retail; *GFL Championship Football, Championship Baseball, GBA Basketball: Two On Two*  
Gamestar; PO Box 7286; Mountain View, Calif. 94039; 800-227-9759 or 415-940-6044

### GRIDIRON!

GRIDIRON! NFL DataDisk  
Football simulation  
\$69.95 retail; *GRIDIRON!*  
Available fall, 1986; *NFL Datadisk*

Bethesda Softworks; 9208 Burning Tree Rd.; Bethesda, Md. 20817; 301-469-7061 or 800-992-4009

### HC Software Australia Games

\$38 each retail; *Cosmos, Napoleonic G.A.P., Land G.A.P.*  
HC Software Australia; GPO Box 2204; Adelaide, South Australia 5001; 08-428377

### Infocom Games

\$49.95 each retail; *Starcross, Suspended, Spellbreaker, Deadline*  
\$39.95 each retail; *Planetfall, The Hitchhiker's Guide To The Galaxy, A Mind Forever Voyaging, Seastalker, Cutthroats, Wishbringer, Zork I, Enchanter, The Witness, Ballyhoo, Suspect, Trinity, Leather Goddesses Of Phobos*  
\$44.95 each retail; *Infidel, Zork II, Zork III, Sorcerer*  
Infocom; 125 CambridgePark Dr.; Cambridge, Mass. 02140; 617-492-6000

### Leader Board

Golf simulation  
\$39.95 retail  
Access Software; 2561 South 1560 West; Woods Cross, Utah 84087; 801-298-9077

### Mindscape Games

\$49.95 each retail; *Deja Vu: A Nightmare Comes True, Bratallas, Balance Of Power*  
\$44.95 retail; *Racer*  
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, Ill. 60062; 800-221-9884 or 800-942-7315 in Ill.

## Read/Write MS-DOS Disks on your Amiga



**DOS-2-DOS** does what you thought Transformer would do. **DOS-2-DOS** transfers files between PC/MS-DOS & Amiga-DOS!

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- Provides duplicate file name detection with query replace options
- Provides TYPE and DELETE commands
- Permits Amiga-DOS disk swapping

Requires standard Amiga with external 5 1/4" expansion disk drive and a formatted PC/MS-DOS diskette. Only \$55 plus \$3 shipping and handling. CA residents add sales tax.



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## Seven Cities Of Gold

Electronic Arts, see review on page 76

### ■Super Huey

Helicopter flight simulation

\$39.95 retail

COSMI; 415 N. Figueroa St.; Wilmington, Calif. 90744; 213-835-9687

### ■Video Vegas

Slots, blackjack, draw poker, keno

\$34.95 retail

Baudville; 1001 Medical Park Dr. SE; Grand Rapids, Mich. 49506; 616-957-3036 or 800-824-8873

## Personal And Home Finance

### 2+2

Home management system

A home management system that features an integrated database to help organize financial transactions and daily activities for the home and small businesses.

\$99 retail

Olamic Systems Corp.; 141 W. Jackson Blvd.; Chicago, Ill. 60604; 312-786-1410

### ■Commodity Futures Real-Time Tic Charts

Commodity quotations

This package, in conjunction with the Market Monitor satellite decoder from Bonneville Telecommunications, allows a user to plot in real time the tic-by-tic quote information from the commodity exchanges.

Bonneville's full-service information includes commodity quotations, information and news.

A user can plot as many as 80 commodities at a time from a selection of more than 200 carried on the Market Monitor. Charts can be printed at any time.

\$795 retail

Ensign Software; 7337 Northview; Boise, Idaho 83704; 208-378-8086

### D.A.S. Home Finance

Assists the homeowner in making financial decisions and in planning for future investments.

\$30 retail

Developers of Advanced Software; 12455 Veterans Memorial Dr., Ste. 204; Houston, Texas 77014

### Financial Cookbook

Financial analysis

The program offers 32 financial calculation "recipes" that contain formulas that produce answers about taxes, investments,

savings, mortgages, IRAs and other personal finance questions.

\$49.95 retail

Electronic Arts; 1820 Gateway Dr.; San Mateo, Calif. 94404; 415-571-7171

### Financial Planner

A what-if planning tool for all common financial transactions with amortizations. All math, rows and columns are built in.

\$100 retail; without ABasiC

\$110 retail; with ABasiC

Gander Software, Ltd.; 3223 Bross Rd., "The Ponds"; Hastings, Mich. 49058; 616-945-2821

### Home I, Real I

PAR financial software

PAR Home I enables a home user to get a handle on major areas of personal financial management. \$69 retail

PAR Real I assists a realtor or investor with several property financial management areas. \$149 retail

PAR Software, Inc.; PO Box 1089; Vancouver, Wash. 98666; 206-695-1368 or 800-433-8433

### ■Isgur Portfolio System

Investment decisions

The Portfolio System provides instant updates and powerful analytical features to help investors and full-time counselors make profitable investment decisions.

The program updates portfolios with the latest data from on-line services; includes the I'S telecommunications program; allows new ways to compile, structure and display portfolio data; contains a memo function that advises a user of important upcoming dates; includes a replay mode that records every move a user makes, providing a virtual turnkey system; and more.

Analytical features include Raise Money, Splits/Dividends, Cash and Margins, Suppose and more.

\$199.95 U.S. retail; \$269.95 Canada retail  
Batteries Included; 30 Mural St.; Richmond Hill, Ontario, Canada L4B 1B5; 416-881-9816

### ■Money Mentor

Personal finance

Money Mentor is a financial accounting system that manages up to 30 separate accounts, keeps track of transactions, computes balances, projects and budgets expenses and alerts a user when a balance or budget has been exceeded.

The program produces comprehensive financial reports in both tabular and graphic form and summarizes account and item transactions, including actuals, budgeted values and variances. It also detects and reports problems resulting from discrepancies in budgeted payments.

Smart scrolls, a feature based on artificial-intelligence techniques, recognizes frequent transactions. This means Money Mentor can complete the logging of new

entries based on recalled information. If the recalled information and new-entry data are the same, the user need not enter anything. The user can, however, overwrite any information he wants changed.

The program utilizes the Amiga's sound, voice, color graphics and mouse input capabilities.

\$95.95 retail

Sedona Software; 11844 Rancho Bernardo Rd., Ste. 20; San Diego, Calif. 92127; 619-451-0151

### PHASAR

Home/small-business management system

PHASAR (Professional/Home Accounting System And Register) is a financial management system that allows up to 40 bank/charge accounts and 130 income/expense categories.

\$89.95 retail

Marksman Technology, Inc.; Rt. 5, Box 221A; Santa Fe, N.M. 87501; 505-455-2681 or 800-334-7792

### ■Trendrider

Talking investor's tool

Trendrider is a program that uses a time-proven method of tracking fluctuations in the mutual-funds market.

The program uses artificial-intelligence techniques and speech synthesis in explaining its investment trend information.

\$99.96 retail

Finally Software; 4000 MacArthur Blvd., Ste. 3000; Newport Beach, Calif. 92663; 714-854-4434

## Other Software

### ■Eye Play 1

Graphic routines

A collection of graphic routines that are randomly generated for a kaleidoscope-like visual effect.

Each program is 40K large, written in C and has 40 routines.

\$19.95 retail

Sterling Software; 77 Mead St.; Bridgeport, Conn. 06610; 203-366-7775

### ■Jumpdisk

Magazine on disk

Jumpdisk is a monthly magazine on disk that contains at least 10 programs and 10 articles. Each issue includes product news and reviews, and reader submissions of programs and articles are invited.

\$7 retail; one month

\$18 retail; three months

\$34 retail; six months

\$60 retail; one year

Jumpdisk; 1493 Mt. View Ave.; Chico, Calif. 95926; 916-343-7658



## Publications

### ■The Amigan Apprentice & Journeyman

Reference journal  
\$24 retail U.S.; one year  
\$34 retail overseas; one year  
The Amigans; PO Box 411; Hatteras, N.C.  
27943; 919-986-2443

## Hardware And Peripherals

### 256K Memory Expansion

\$119.95 retail  
Skyles Electric Works, Inc.; 231-E S.  
Whisman Rd.; Mountain View, Calif.  
94041; 800-227-9998 or 415-965-1735

### 256K Memory Expansion

\$115 retail  
Starpoint Software; 122 S. Broadway;  
Yreka, Calif. 96097; 916-842-6183

### ■68881 Floating Point Coprocessor Board

Math coprocessor board

This add-on math coprocessor board features a Motorola 68881 chip and 68010 microprocessor and, according to its vendor, increases the processing speed of math-oriented software by as much as 500 percent.

Software included with every board consists of a *Coprocessor Interface Emulator*; *Lattice C*; offering direct-replacement, double-precision IEEE-format math libraries; *Aztec C68K*; preliminary floating-point libraries; and an *Assembler*, which enables encoding of 68881 mnemonics using Amiga or Aztec assemblers.  
\$149 retail; bare board  
\$269 retail; without 68881  
\$459 retail; with 68881  
Netch Computer Products; PO Box 645;  
Monrovia, Calif. 91016; 818-334-1002

### ADC-1 Data Acquisition And Control System

Measurement; monitoring hardware

An RS-232 peripheral product that combines analog and digital inputs with hard-wired, controlled outputs and a transmitter  
\$449 retail; standard model  
Remote Measurement Systems, Inc.; 2633  
Eastlake Ave. E, Ste. 200; Seattle, Wash.  
98102; 206-328-2255

### Alegria

Memory-expansion unit

The Alegria allows a user to add 512K bytes of external memory to an Amiga. It features a 3/4-inch footprint and a no-wait-state design that lets an Amiga operate at

its intended speed. It can be upgraded to 2MB.

\$379 retail  
Access Associates; 491 Aldo Ave.; Santa Clara, Calif. 95054; 408-727-8520

### Amiga Expansion Box

\$995 retail; Expansion box, 8 expansion slots, 512K bytes of expansion fast memory (with sockets for 8MB), battery backed-up real-time clock, DMA SCSI hard disk interface, power supply  
\$1,995 retail; Above plus 8MB of memory  
The Gemstone Group; 620 Indian Spring Ln.; Buffalo Grove, Ill 60089;  
312-537-7405

### Aprotek Printers

Daisy wheel and dot matrix printers  
\$279.95 retail; Aprotek Daisy 1120  
\$189.95 retail; Seikosha SP-1000A  
Aprotek; 1071-A Avenida Acaso; Camarillo, Calif. 93010; 805-987-2454

### ■ASDG Multifunction Boards; Card Racks

The Convertible SMGC is a Zorro-compatible multifunction board that incorporates the following sections: four DMA-driven serial ports supporting synchronous and asynchronous operation, a math processor in the form of a M68881, a DMA-driven GPIB port (IEEE 488) and a clock with battery backup. The board may be purchased with any combination of sections populated or depopulated.

The Convertible .5M, 1M and 2M are Zorro-compatible RAM boards that are fully auto-configuring. Memory access takes place at full processor speed. \$450 retail, .5MB; \$650 retail, 1MB; \$900 retail, 2MB

The Mini-Rack-B is a Zorro-compatible two-slot card rack that contains a 6-amp power supply. \$300 retail

The Mini-Rack is a Zorro-compatible three-slot card rack that contains a 9-amp power supply. \$500 retail  
ASDG, Inc.; 280 River Rd., Ste. 54A; Piscataway, N.J. 08854; 201-540-9670

### ■AX2000

2MB RAM board

The AX2000 adds 2MB of RAM to the Amiga. The board uses standard memory bus architecture to ensure compatibility with all standard peripherals.

It fits onto the expansion port on an Amiga and duplicates the port, so a user can add other peripherals or piggyback two units for more than 4MB of RAM. The extra RAM can be used to create a RAM drive that allows a user to compile his programs quickly in memory.  
\$899 U.S. retail; \$1,276.54 Canada retail  
Comspec Communications, Inc.; 153  
Bridgeland Ave., Unit 5; Toronto, Ontario, Canada M6A 2Y6; 416-787-0617

### ■Bright-1

MIDI interface card

The Bright-1 is a MIDI interface card

that connects to an Amiga's serial port with a male-to-male cable (not supplied) and provides 5-pin connectors for MIDI In and MIDI Out.

It has two bicolor LEDs that verify proper connection and monitor activity on the musical instrument interface.

\$39.95 retail  
Micro Engineering of Northern Virginia;  
PO Box 11780; Alexandria, Va. 22312;  
703-750-7860

### The Business Partner

Hard disk drive  
\$2,042.95 retail; 10MB  
\$2,199.95 retail; 20MB  
\$2,504.95 retail; 40MB  
The Micro Forge; 398 Grant St. SE;  
Atlanta, Ga. 30312; 404-688-9464

### Buss Station

Features include a recessed slot; surge, spike, RFI and EMI interference; a multiport data switch; a RAM expansion port; arbitration circuit; and eight 86-pin card edge connectors.

DSI; 717 South Emporia; Wichita, Kan. 67211; 316-264-6118

### ■Comspec Printer Enhancements

The Microshare MCS 6550 is a 256K printer network for an Amiga. The buffer frees up the computer during outputs to the printer by storing text and graphics in its own memory rather than the Amiga's memory. \$286 U.S. retail; \$447.95 Canada retail

The Microshare MCS 1050 is an interface that allows an Amiga to communicate with an IEEE printer, such as the Commodore MPP 1361 or the Commodore 6400. \$128 U.S. retail; \$201.54 Canada retail

The Microshare MCS 8008 is an eight-channel, 256K printer network that allows a user to connect several computers to one printer. Its built-in 256K buffer allows the MCS 8008 to accept requests for printing from more than one computer at the same time. \$714 U.S. retail; \$1,119.95 Canada retail

Comspec Communications, Inc.; 153  
Bridgeland Ave., Unit 5; Toronto, Ontario, Canada M6A 2Y6; 416-787-0617

### Converter+

Universal interface and buffer

Provides buffer memory for a printer and interfaces parallel-to-serial or serial-to-parallel at the flip of a switch.

\$229.95 retail; 64K  
\$279.95 retail; 256K  
\$329 retail; 512K  
\$399 retail; 1MB  
\$179.95 retail; OK  
Johnathon Freeman Designs; PO Box  
880114; San Francisco, Calif. 94188;  
415-822-8451

### Desktop\_Amp, Disk\_Mate

Stereo amplifier, disk drive expansion box  
Desktop\_Amp is a small, stereophonic amplifier. \$44.95 retail



**Disk\_Mate** is an add-on peripheral box that allows a user to use two or three external drives with the Amiga. \$89.95 retail (built on special order only)  
Digital Systems Engineering; 6854 Blowing Wind Way; Citrus Heights, Calif. 95621; 916-725-3025

#### ■Digi-View

##### Digitizer

Digi-View uses the Amiga's exclusive hold-and-modify mode and dithering techniques to display broadcast-quality color photographs.

Color resolution is made possible by a precision color-separation process that uses color filters (included) and an inexpensive black-and-white video camera to resolve 21 bits per pixel, or more than 2 million shades.

In monochrome mode, Digi-View features a resolution of up to 640 by 400 with 128 gray levels. Special image-processing software eliminates flickering and contour effects.

IFF disk format allows a user to transfer pictures to other Amiga graphic programs. \$199.95 retail; video cameras and accessories available  
NewTek; 701 Jackson, Ste. B3; Topeka, Kan. 66603; 913-354-9332

#### Easy!

##### Drawing pad

A pressure-activated drawing pad that allows a user to draw directly into the Amiga with a pencil.  
\$499 U.S. retail  
Anakin Research, Inc.; 100 Westmore Dr., Unit 11C; Rexdale, Ontario, Canada M9V 5C3; 416-744-4246

#### The Executive

##### Expansion box

A two-slot, 100-pin auto-configuration expansion box that sits under the Amiga monitor. It is 2.8-inches high and has a pass-through for other hardware.  
The Micro Forge; 398 Grant St. SE; Atlanta, Ga. 30312; 404-688-9464

#### ■ImaJet

##### Ink-jet color-image printer

The Imajet ink-jet color-image printer operates at a maximum of 120 dots per inch and can produce more than 4,000 dithered colors.  
\$1,495.98 retail  
Illustrated Images, Inc.; PO Box 19149; Portland, Oreg. 97219; 503-246-2774

#### IVS Busbox

##### Bus expansion box

A fully buffered bus expansion box with integral power supplies for the Amiga. Included are four expansion slots in a fully buffered backplane and a real-time clock.  
\$349.95 retail  
Interactive Video Systems; 15201 Santa Gertrudes Ave., Y-102; La Mirada, Calif. 90638; 714-739-5020

#### IVS Ramex-1M

##### RAM memory expansion board

Comes with 1MB of dynamic RAM installed and is user expandable up to 8MB.  
\$299.95 retail  
Interactive Video Systems; 15201 Santa Gertrudes Ave., Y-102; La Mirada, Calif. 90638; 714-739-5020

#### MAS-Drive 20

##### 20MB, half-height SCSI hard disk drive

\$1,495 retail  
MicroBotics, Inc.; PO Box 855115; Richardson, Texas 75085; 214-437-5330

#### ■MediaPhile System

##### Computer-controlled audio/video center

This system, which includes a Sony EVS 700U Video 8 videocassette deck, *MediaPhile 1.0* software and an interface unit, gives Amiga users access to 24 hours of digital stereo sound, four hours of video or mixed audio and video on one videocassette tape.

Users may watch television programs or video tape on their computer monitors—using Commodore Business Machines, Inc.'s optional Genlock peripheral device—and play audio and music video from the same tape.

The system's video editing features include audio dubbing in stereo and a flying erase head for professional-looking insert edits. Record, freeze-frame, slow-motion, single-frame-stepping, double-speed and high-speed-search options are selectable from a control pad on screen.  
\$1,334 retail  
Interactive MicroSystems; PO Box 272; Boxford, Mass. 01921; 617-887-9607

#### Megabytes/Amiga

Megabytes/Amiga has 1.05, 2.10, 4.19 or 8.39MB of memory on a single board, which is designed to plug directly into the right side of the Amiga or to fit into the Zorro expansion box.  
\$599 retail; 1.05MB  
\$899 retail; 2.10MB  
\$1,499 retail; 4.19MB  
\$2,799 retail; 8.39MB  
Skyles Electric Works, Inc.; 231-E South Whisman Rd.; Mountain View, Calif. 94041; 800-227-9998 or 415-965-1735

#### The Micro Forge Hardware

Memory and hard disk expansion systems  
\$656.95 retail; Seven Slot Expansion Box  
\$84.95 retail; One Slot Expansion Board  
\$1,134.95 retail, 10MB; \$1,229.95 retail, 20MB; \$1,479.95 retail, 40MB; Basic Hard Disk System  
\$755.95 retail, 10MB; \$849.95 retail, 20MB; \$1,099.95 retail, 40MB; Second Hard Drive Kit  
\$1,507.70 retail, 10MB; \$1,582.70 retail, 20MB; \$1,850.45 retail, 40MB; Standard Single Drive System  
The Micro Forge; 398 Grant St. SE; Atlanta, Ga. 30312; 404-688-9464

#### MIDI For Amiga

Standard MIDI IN, two MIDI OUTs and MIDI THRU interface  
\$59.95 retail  
Skyles Electric Works, Inc.; 231-E South Whisman Rd.; Mountain View, Calif. 94041; 800-227-9998 or 415-965-1735

#### ■MIDI GOLD

##### MIDI interface

MIDI Gold is a MIDI interface that connects directly to the serial port of an Amiga. It features dual MIDI-Out and single MIDI-In connections and a Sync-Out connection that provides a clock and start/stop control for drum machines and other devices.

MIDI Gold comes with a custom metal enclosure and an interface cable.  
\$79 retail  
Golden Hawk Technology; 427-3 Amherst St., Ste. 389; Nashua, N.H. 03063; 603-882-7198

#### Model RM-2 Sync Generator And Genlock Subsystem

Designed for professional use of the Amiga in recording studios and broadcast applications.  
\$2,500 retail; RM-2  
\$300 retail; Keyer module (if required)  
Burklund & Associates; 3903 Carolyn Ave.; Fairfax, Va. 22031; 703-273-5663

#### MTA Series 1000

##### Optical computer components

Series 1000 components will convert an Amiga to an interactive laserdisc terminal. Available Winter, 1986; dependent on Genlock System  
Media Technology Associates; 9208 Burning Tree Rd.; Bethesda, Md. 20817; 301-469-7060

#### Multiport Controller

##### Multiport asynchronous RS-232C/RS-422 port controller

The basic system consists of one DCE and one DTE port factory preset at 9600 baud, 32K bytes of RAM expandable to 192K bytes in 32K increments, resident FORTH or BASIC control language available on host Port 1, resident setup menu invoked by embedded control characters and non-volatile memory storage of port setups (EEPROM).  
\$877 retail  
Component Systems, Inc.; 778-A Brannan St.; San Francisco, Calif. 94103; 415-861-1345

#### Okimate 20

##### Color printer

A ribbon-transfer color printer that allows users to print thousands of shades of color to create pictures and graphics.  
\$268 retail; printer and Plug 'N Print kit  
Okidata; 532 Fellowship Rd.; Mount Laurel, N.J. 08054; 800-654-3282 or 609-235-2600



## Hardware And Peripherals Continued

### ■ Pacific Cypress

RAM expansion boards/RAM disks

The XpanderII board is a 2MB RAM expansion board/RAM disk for the Amiga 1000 or 2000 that allows a user to use memory intensive programs. The board may be loaded in increments of .5MB, 1MB or 2MB, using 256K DRAM chips. The expansion slot allows a user to add additional boards to reach 4MB, or an optional SCSI-multifunction board. \$499 retail; 0 memory

The XpanderII 2MB unit is a self-contained 2MB RAM expansion board/RAM disk for the Amiga 1000. The board may be loaded in increments of .5MB, 1MB or 2MB, using 256K DRAM chips. \$499 retail; 0 memory

The XpanderII 4MB unit is a self-contained 4MB RAM expansion board/RAM disk for the Amiga 1000. The board may be loaded in increments of .5MB, 1MB, 2MB, 2.5MB, 3MB or 4MB, using 256K DRAM chips. \$799 retail; 0 memory Pacific Cypress; 46127 Landing Pkwy.; Fremont, Calif. 94538; 415-656-1974

### The Pal

Expansion chassis

An expansion chassis that features a hard disk that transfers data via true DMA into the Amiga; a hard disk controller capable of a 10 megabit data transfer rate; five DMA expansion slots; 1MB RAM with a battery-backed clock/calendar that resides on the motherboard; room for multiple storage and retrieval devices; 2 to 8MB RAM card options; optional pass-through BUSS connector for further expansion; and optional prototyping card. Retail price depends upon configuration Byte By Byte; Arboretum Plaza II; 9442 Capital of Texas Hwy. N., Ste. 150; Austin, Texas 78759; 512-343-4357

### ■ Parallel Printer Buffer

\$199 retail; 64K

\$259 retail; 256K

Johnathon Freeman Designs, Inc.; PO Box 880114; San Francisco, Calif. 94188; 415-822-8451

### Penmouse

Input device

\$295 retail

Kurta Corp.; 4610 S. 35th St.; Phoenix, Ariz. 85040

### Plug-compatible, Standard 256K

A compatible, standard memory expansion in a heavy-duty metal case.

\$149.95 retail

MicroBotics, Inc.; PO Box 855115; Richardson, Texas 75085; 214-437-5330

### Pow-R-Card

Memory expansion

An expansion board that upgrades in increments of 2MB to give a user a full

8MB of RAM. It fits all expansion boxes for the Amiga, including the new 7-slot expansion box.

RS Data Systems; 7322 Southwest Freeway, Ste. 660; Houston, Texas 77074; 713-988-5441

### Series One

Graphics tablet

A graphics tablet that comes in three sizes and includes a pen, cabling, power supply and software driver. Kurta Corp.; 4610 S. 35th St.; Phoenix, Ariz. 85040; 602-276-5533

### StarBoardII

2MB memory expansion

A memory device that has optional multi-function features such as a battery-backed real-time clock, Motorola math chip socket and parity checking. \$495 retail; 512K installed MicroBotics, Inc.; PO Box 855115; Richardson, Texas 75085; 214-437-5330

### Stereo Sound Digitizer

This unit is a hardware device designed to provide digital sound capture and recording for the purpose of adding high-quality speech and special effects to programs.

\$344.95 retail

The Micro Forge; 398 Grant St. SE; Atlanta, Ga. 30312; 404-688-9464

### ■ TIC

The Tic provides an Amiga with a tiny, battery-backed clock/calendar that plugs into the second joystick port.

The Tic's three-year battery will maintain time even if temporarily removed from the Amiga.

The Amiga's internal time can be changed by moving the displayed clock's hands with the mouse.

\$59.95 retail

Byte By Byte; Arboretum Plaza II; 9442 Capital of Texas Hwy. N., Ste. 150; Austin, Texas 78759; 512-343-4357

### Universal Printer/Plotter Buffer

Printer/plotter accessory

Interfaces an Amiga to a wide variety of printers and plotters by providing RS-232C and Centronic Parallel interfaces on both its input and output.

\$269 retail; 64K model

\$329 retail; 256K model

Johnathon Freeman Designs; PO Box 880114; San Francisco, Calif. 94188; 415-822-8451

### Volks Omega 80

Modem

Designed for the Amiga 1000, the modem features auto dial/auto answer; user selectable pulse/tone dialing; built-in audio monitor speaker; dial tone and busy detection; an auxiliary telephone jack; and on-line software.

\$199 retail

Anchor Automation; 6913 Valjean Ave.; Van Nuys, Calif. 91406; 818-997-7758

## Accessories

### Amiga Parallel Printer Cables

\$17.95 retail; six-foot

\$21.95 retail; 10-foot

Aprotek; 1071-A Avenida Acaso; Camarillo, Calif. 93010; 805-987-2454

### Belkin Accessories

\$18 retail; Amiga parallel printer cable

\$89 retail; two-way parallel data switch

\$129 retail; four-way data-transfer switch

Belkin Components; 4718 W. Rosecrans Ave.; Hawthorne, Calif. 90250;

800-223-5546 or 213-644-3184

### IVS Magnus

Computer audio system

\$99.95 retail

Interactive Video Systems; 15201 Santa Gertrudes Ave., Y-102; La Mirada, Calif. 90638; 714-739-5020

### ■ MouseTime

Battery-backed, real-time clock

\$39.95 retail

MicroBotics, Inc.; PO Box 855115;

Richardson, Texas 75085; 214-437-5330

### Universal Interface Converter

Interface conversion

Interfaces serial-to-parallel or parallel-to-serial at the flip of a switch.

\$99 retail

Johnathon Freeman Designs; PO Box 880114; San Francisco, Calif. 94188; 415-822-8451

## Books

### The AmigaDOS Manual

\$24.95 retail

Bantam Books, Inc.; 666 Fifth Ave., 21st Fl.; New York, N.Y. 10103; 212-765-6500

### The Amiga: Image, Sound and Animation on the Commodore Amiga

\$19.95 retail

Microsoft Press; 16011 NE 36th Way; Box 97017; Redmond, Wash. 98073

### Mastering AmigaDOS

\$16.95 retail

Arrays, Inc.; 6711 Valjean Ave.; Van Nuys, Calif. 91406; 818-994-1899

### Progressive Peripherals & Software Books

\$24.95 retail; *The Amiga Handbook*

\$15.95 retail; *The Amiga System*

Progressive Peripherals & Software; 464

Kalamath St.; Denver, Colo. 80204;

303-825-4144

### Sybex Books

\$24.95 retail; *Programmer's Handbook*

\$28.95 retail; *Programmer's Reference Guide*

Sybex, Inc.; 2344 Sixth St.; Berkeley,

Calif. 94710; 415-848-8233





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# QuantumLink's Habitat

## The On-Line World from Lucasfilm Games

BY SHAY ADDAMS

*Vienna, Virginia, I recently discovered, is not the place where they make those funny little sausages. Instead, it is best known as the home of the QuantumLink telecommunications service, which I suspect will soon be best known as the home of Habitat—a breakthrough game that transforms telegaming into an exotic new kind of computer entertainment. On one of my rare outings from the QuestBusters cave, I drove to Vienna and witnessed Habitat in the final stages of development.*

Version 1.6 arrived from the coast only minutes before I pulled in from Pennsylvania. (It arrived in much better condition than I.) All I knew was that it was supposed to be an adventure produced by Lucasfilm Games, whose trademark is the inventive use of fractal graphics in entertainment software. Having played *The Eidolon*, I expected to spend a few hours wandering through three-dimensional caves, slaying dragons and looking for treasure. So I was totally unprepared for *Habitat*, which turned out to be far more than a mere adventure game—it is a multi-player happening that takes place live, on-line, as an unlimited number of people inhabit, explore and interface in an alternative universe depicted with animated graphics.

### Inside QuantumLink Central

Janet Hunter, QuantumLink's Entertainment Software Manager, slipped a disk into the drive, accessed the system and chose the People Connection department from the initial menu. (If you're wondering why a game is located in the section devoted to chatting on-line with other QuantumLink users rather than in the Just for Fun section, the answer is that people, not computer-controlled characters, are the game in

*Habitat*.) Next she chose Habitat from the menu and flipped the disk to the side containing the special software. Moments later, a vividly colored scene materialized onscreen.

It showed Janet's "turf," a room where a character called an Avatar stood awaiting her command. All *Habitat* players have individual rooms, which they can redecorate by painting them with various colors and patterns, and by rearranging the furniture and adding new furnishings. Each Avatar's turf comes equipped with a pet cat, whose tail swishes back and forth in an example of the spot animation sometimes used to enliven the scenery.

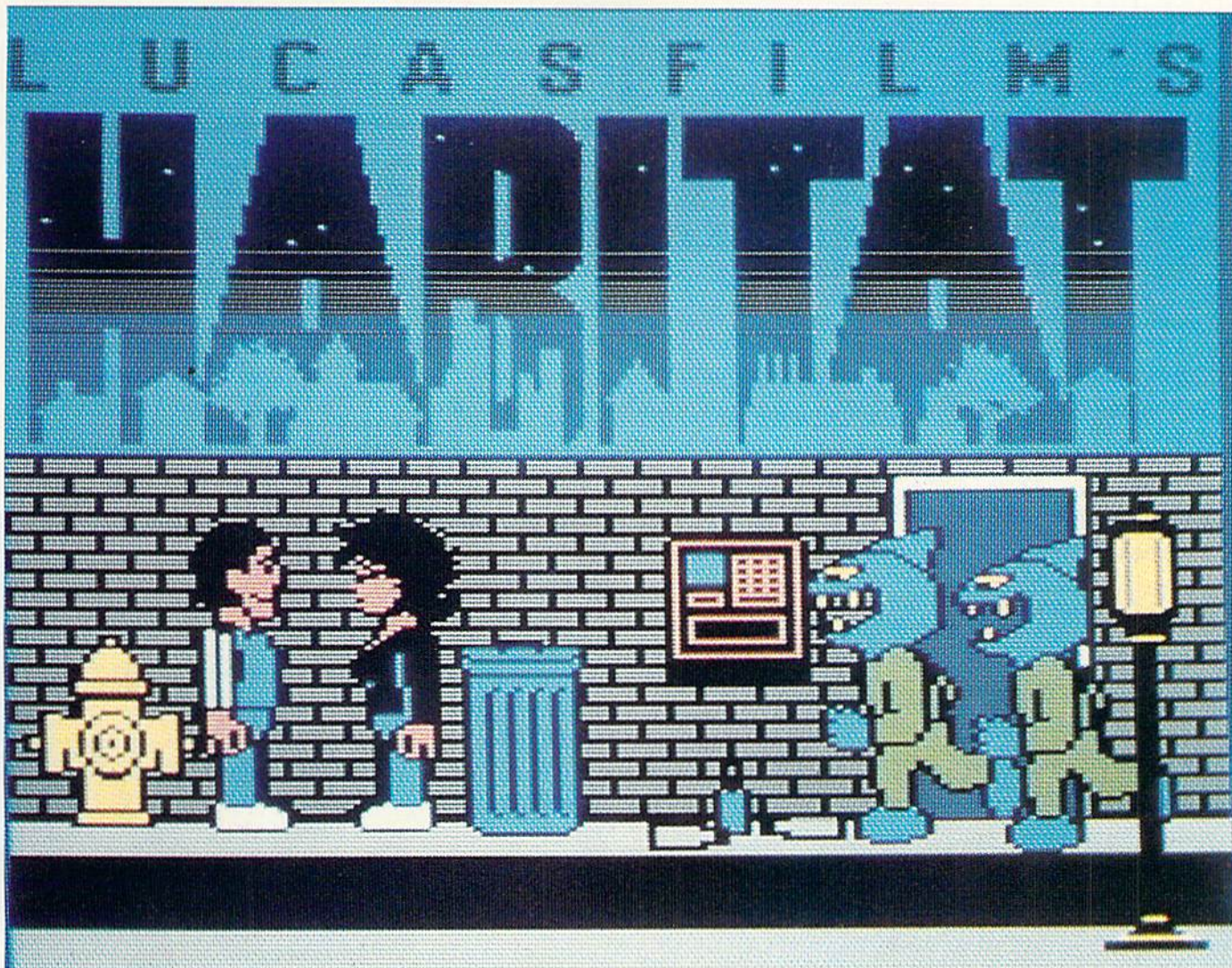
Sorry dog-lovers, but no dogs are allowed in this fantasy world. And cat-haters can give up on the idea of killing the cat, which programmer/designer Chip Morningstar says was added as a sort of joke by Gary Winnick, who designed the graphics for *Habitat* (and other Lucasfilm games).

Besides customizing your turf, you can design your Avatar's appearance when you first start playing, by choosing a head and other parts that give your character its own personality.

Janet showed me how to maneuver the Avatar around with a joystick. By pressing the button, I displayed a question mark that was bordered by four arrows pointing at the available commands: go, do, get, and put. Choosing one is merely a matter of moving the joystick in the appropriate direction, punching the button and releasing it. To cross the room, I first moved the cursor to the destination and selected the "go" command. The Avatar, who reminded me of the Wizard of Id, walked over and stopped beside the chest of drawers. By now the room—the *real* room in which we sat—had filled with a crowd of QuantumLink staffers eager to see the latest version of the game.

The "do" command will activate any object that you can do anything to or with. When I positioned the cursor on a drawer and executed the "do" command, telling the Avatar to open it, the room's picture was replaced with one showing the drawer's contents. Like other objects, these could be obtained with the "get" command. The "put" command is handy for dropping things you're carrying. Avatars can only hold one object at a time, but you can fill a bag or other container and carry several things around. (It's like your





inventory in a typical adventure.)

After placing the cursor on the Avatar and choosing "do," I watched him sit down, stretch out on the bed, and cycle through his other motions. With a punch of the function keys, I had him in a game that's like an animated cartoon. Sound effects—a juke box with music, dial tones and busy signal on a phone—are also heard from time to time. Because the program (as well as QuantumLink itself) is designed exclusively for Commodore computers, the graphics and sound effects take full advantage of the Commodore 64's capabilities.

### Regions to Roam

By moving to any of the room's doors or sides, your Avatar can stroll through a vast world that in the preliminary version encompassed more than 500 regions. (Each room or location, the standard term in an adventure game, is called a region in *Habitat*.) I visited a few, but since the game was still in the developmental stages when I saw it, I couldn't go

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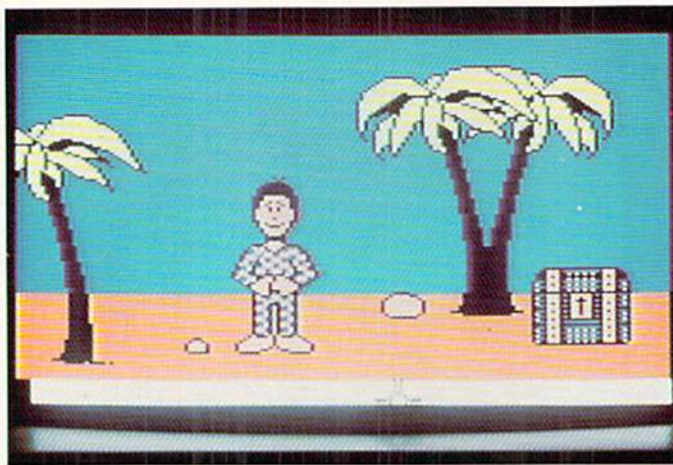
***Your words go through a modem and over the phone wires to the Stratus computer that houses the QuantumLink network. From there, it is routed to the computers of every person whose Avatar is in the same region.***

---

far. When the game goes on-line, there will be even more places to explore, visit and hang out.

You can do most of the things you normally would in a conventional adventure: shop in stores for clothes, tools and other gear, find things like keys and use them to open treasure chests, and solve object-oriented puzzles. While you can't cast spells on other Avatars, some objects do have





magical properties. If that were all you could do, then *Habitat* would be just another adventure—and not an exceptionally interesting one. But the “talk” command changes all that, opening countless possibilities that are limited only by the players’ imaginations.

To execute this command, toss away the joystick and hit the keyboard, typing in sentences as long as 110 characters. Your words go through the modem and over the phone wires to the Stratus computer that houses the QuantumLink network. From there, it is routed to the computer of every person whose Avatar is in the same *Habitat* region, no matter where in the country they are located. If you want to conduct a private conversation, just move the cursor to the Avatar you want to talk to before hitting the button: your message appears only on his screen.

It’s like QuantumLink’s chat mode, but your words pop up in a cartoon-style balloon at the top of the screen. If several Avatars are in the same room, their balloons are color-coded so you can tell who just said what. (And you can learn an Avatar’s user name by using the program’s “identify” feature.)

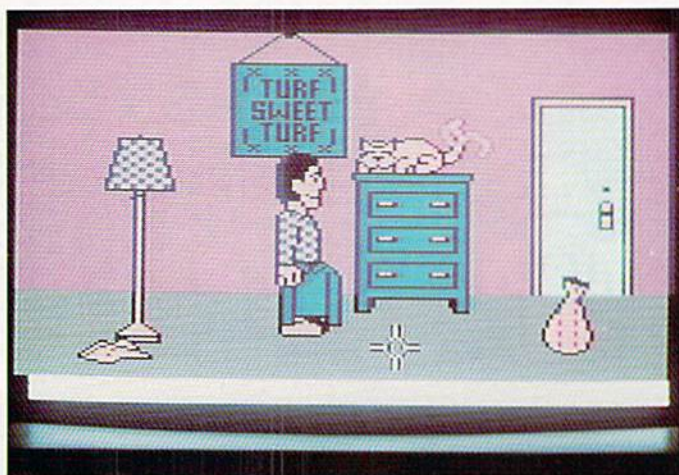
Personally, I have never liked talking with disembodied entities on CompuServe’s CB-style channels, or even in QuantumLink’s cozier chat mode. But this presentation puts the experience in a fresh and unique perspective. It’s like living in a cartoon world populated by people from this one. You can shoot the breeze with old friends, meet new people, even kill them (I’ve wanted to kill more than a few of the people I’ve encountered on-line), and organize gatherings to do whatever you want. You can let others in your turf visit, hold meetings, parties or Tupperware parties, but you can’t enter someone else’s turf without permission. (Just be sure to lock the door when you leave, and don’t lose the key to your turf.)

### Questers Wanted, Apply Within

After learning the ropes, you’ll want to walk down to the

fountain and visit the Oracle, the unseen all-knowing mysterious power who runs the show around here. Here you can meet other Avatars, and you can also ask the Oracle to send you on an adventure—to find the mystic orb of Xebop and return it to the Temple of Zak, or to fulfill a similar quest that may take days, weeks or even months. As in one-player adventures, you’ll have to dig up clues and solve puzzles to complete the quest, but here you will have a crew of real people to work with collectively. If you’ve already organized a team of adventurers, great. Otherwise the Oracle will match you up with other adventurers. (Unless you really want to go it alone.)

You can also read the *Habitat Weekly Rant* for want ads about adventures. This newspaper might also yield valuable



clues or ads selling valuable items. Information also turns up in books, and you can write notes and leave them for others. Instead of heading out on a quest right away, you might prefer to roam around and see what’s happening, maybe draw a map for use in future sessions. There are hotels and inns in case you want to return to the real world without trekking all the way back to your turf. And if you already know where you want to go, you can teleport directly to your destination and save yourself a lot of footwork.

Conventional adventures are not the only kind of pastime available in *Habitat*. Chip Morningstar, the Lucasfilm programmer who dreamed up the idea and masterminded its production, explains, “Teams of contestants can play other games, something like capture the flag, for example, with a time limit. Other activities are mainly social, involving conversation and interaction. For instance, there’s an interaction theater in which you can play part of a character in a play.” According to Morningstar, “The only limits are those of the underlying medium, so there won’t be any skill and action videogames.”

Morningstar says the idea for *Habitat* “had been rattling



around in my head for years before I joined Lucasfilm." (He didn't work on Lucasfilm's *Ballblazer* or *Rescue on Fractalus!* but wrote the assembler and other tools for *The Eidolon* and *Koronis Rift*.) "I had played *Original Adventure* and the *Zork*s, and was a big fan. But computer-controlled characters don't have the depth and richness of human players, and I hope the characters in *Habitat* will evolve out of people interacting in the game. That was the idea, to create something in which a lot of different things and activities are possible, to pull in all kinds of people—something *really* new."

It's so new, Morningstar and QuantumLink don't quite know what to call it, referring to *Habitat* as a "world simulation."

### How it Works

Written In PL1, a high-level language similar to PASCAL, the program has been underway since the summer of 1985. Basically, it consists of two programs. One resides in QuantumLink's computer, the other on a disk that goes to all players. The host program keeps track of everything happening in the game, things such as the location of each player. It also has object data, which determines the characteristics of each item—whether it can be used, picked up, or acted on in any way.

The software on your disk holds all the graphics, as well as corresponding data on the objects. When you move from one region to the next, the host program tells your disk about the new region, what objects are there, and which graphics to display. The more objects it has to transmit



the joystick and know how to type.

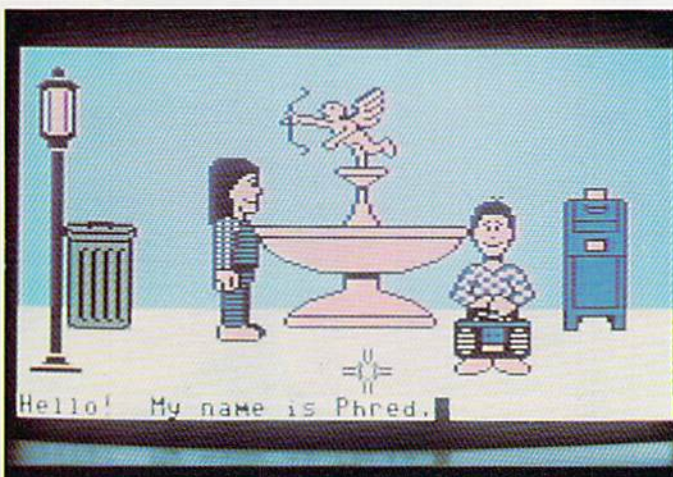
Naturally, the pace is quickened with a 1200-baud modem, which boosts the speed at which your computer communicates with QuantumLink's computer. As with most on-line systems, the game may slow down somewhat if a lot of people are playing simultaneously—precisely how much remains to be seen. There's no limit to the number of people who can play, other than six (the maximum number of players permitted in a room) *multiplied by the number of regions*. Lucasfilm will be continually adding new regions, with the goal of permitting every QuantumLink subscriber to simultaneously participate in *Habitat*. The game is one of QuantumLink's "plus" services, which means it will cost six cents a minute to play.

### Speculation: A Multitude of Multiplayer Possibilities

Because *Habitat* is a multiplayer game that I witnessed in a one-player setting, a critical review will have to wait until the game is actually on-line. Right now I can only comment on its potential, which is unparalleled in the history of telegaming. Visually, it is light years ahead of the only other multiplayer teleadventure I've seen, which used primitive graphics—an X for your character and a Y for someone else's—and had ineffective communication capability. I didn't spend much time in that fantasy world. But I have played other multiplayer games, play-by-mail games in which hundreds of people interact in fantastic settings, and have observed a few things that are likely to occur in *Habitat* only faster, since you communicate via modem rather than the mail.

Whenever crowds of people get together in a new environment (whether in a game or even in real life), the result is more than just a lot of individuals in the same place: people form relationships, which gradually coalesce into a society. That's what happened when cattlemen, prospectors, sheep-

*Continued on pg. 188*



information about, the longer the process takes. But because the graphics are on the disk, you don't waste time waiting for fresh illustrations to download. When you end a session and return to the real world, all the relevant things you've done, objects you've found and so on are recorded in the data base of the main program. Of course, all you have to do is wield



*The votes are in! We took our best reviewers and had them choose their favorite products of the year in order of preference—and the result is our second annual collector's edition of the Best of 1986. Of course, there are many other excellent products on the market, but these are the ones that received our reviewers' top recommendations.*

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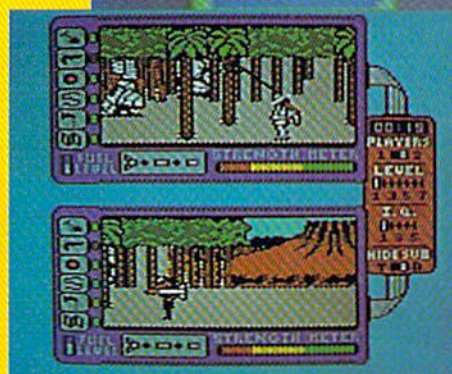
Use creative and magical powers to traverse 100 of the toughest screens ever built this side of reality. Construction set also included.

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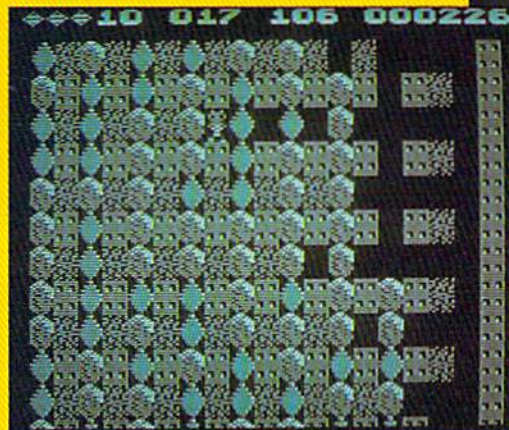
Synapse/Broderbund  
Commodore 64  
\$29.95

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On-Track



Spy vs. Spy II



Super Boulder Dash

## World Karate Championship

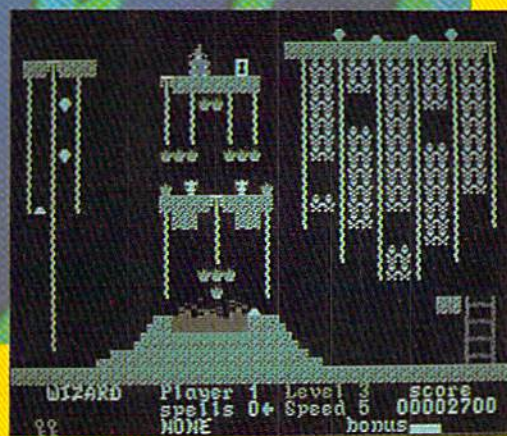
Epyx  
Commodore 64  
Price not available

Fluid, realistic movement and detailed graphics make this the best of Kung Fu contests. Fourteen karate moves can be performed with tug of joystick. One or two players.

## Law of the West

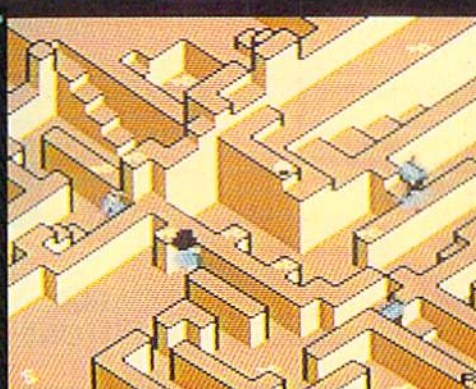
Accolade  
Commodore 64  
\$29.99

As sheriff in the Old West, you need a quick mind and even quicker draw to keep peace among prairie folk. Excellent audio-visual effects.



Ultimate Wizard

45: CANT GET THERE  
SCORE: 000000  
BONUS: 4975  
KEYS : 015



Lode Runner's Rescue

## On-Track

Gamestar/Activision  
Commodore 64  
\$39.99

Arcade-style Formula racing at its bash 'n crash best. Challenge friend or computer on ten famous pro raceways. Fast and furious.

## Kung Fu Master

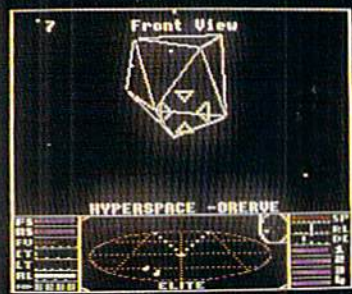
Data East  
Commodore 64  
\$29.95

Get a different style karate kick in this home version of the Data East arcade hit. Fair maiden has been captured and you must subdue five floors of deadly attackers to face evil wizard in a showdown.





**Black Thunder**



**Elite**

## Elite

Firebird  
Commodore 64  
\$29.95

More than an intergalactic battle. The three-dimensional space-combat phase—complete with missiles, lasers and stomach-churning evasive maneuvers—is enough to keep you hooked.

## Fast Tracks

Activision  
Commodore 64  
\$34.95

Build your own personalized race tracks, then compete on them. Computerized slot racing made easy, with unlimited track pieces, simple construction and no time-consuming clean-up.

## Black Thunder

Avalon Hill Microcomputer Games  
Commodore 64  
\$25

High-speed road-warrior contest with explosive graphics, unceasing action and addictively simple game mechanics to keep you coming back. Fifteen levels.

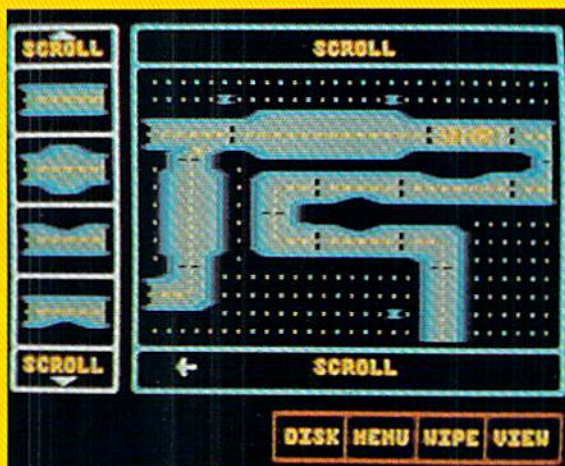
## Zorro

Datasoft  
Commodore 64  
\$29.95

Don mask and cape to parry your way through legions of evil villains. Colorful settings not only give the contest eye appeal but add challenging obstacles.

# THE BEST OF SPORTS GAMES

**Fast Tracks**



**MARK COTONE**

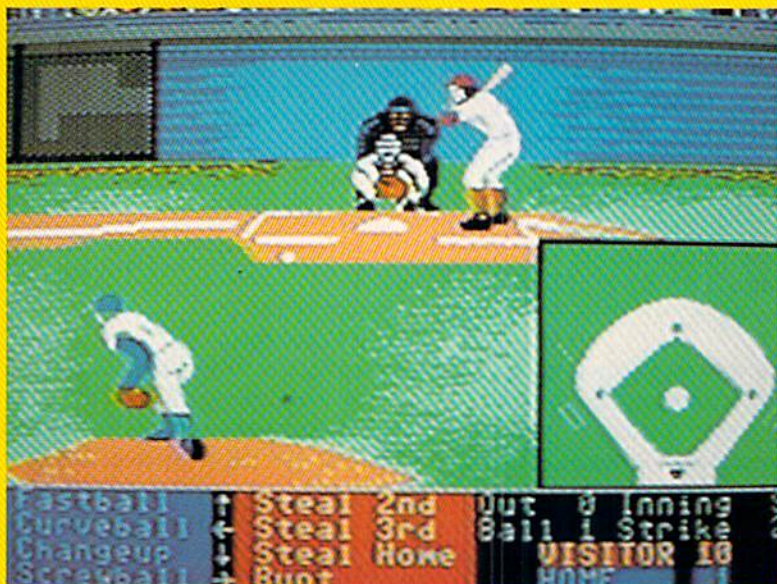


**Leader Board**

## Leader Board

Access Software  
Commodore 64  
\$39.99

Everything you could want in a golf game. Picturesque landscape, full assortment of clubs, four 18-hole courses, realistic actions and room for a foursome. True sports simulation.



**Hardball**

## Hardball

Accolade  
Commodore 64  
\$29.95

The diamond really shines in this

rendition of the national pastime in which all action unfolds at field level. Not only does this gem take you out to the ball game, it puts you smack in the middle of it.





**Star Rank Boxing**



**GBA Championship Basketball**

## GBA Championship Basketball: Two-on-Two

Gamestar/Activision  
Commodore 64  
\$34.95

Old schoolyard favorite heightened with so many options, it will make you dribble. Draft a teammate, hold practice, play two-team competition, then form a league. One or two players.

## Star Rank Boxing

Gamestar/Activision  
Commodore 64  
\$29.95

Ringside seat to the roped square, where you design, train, manage and control your own boxer. And brawn isn't everything—fighting strategy and pre-planning play just as large a role.

## Winter Games

Epyx  
Commodore 64  
Price not available

Seven Olympic-style trials that put reflexes, timing and eye-hand coordination to test. Familiar sights and sounds of pageantry are there. Up to eight players can compete.

## Super Cycle

Epyx  
Commodore 64  
Price not available

This two-wheeling challenge pits you against a field of computer-controlled cycles. Lean on turns and bump opponents for position—but avoid crashes at all costs.

## Great American Road Race

Activision  
Commodore 64  
\$29.95

Scenic coast-to-coast road rally at speeds topping 150 miles per hour. Every type of road obstacle is incorporated, including state troopers.



**Winter Games**



**Super Cycle**

## SubLogic Football

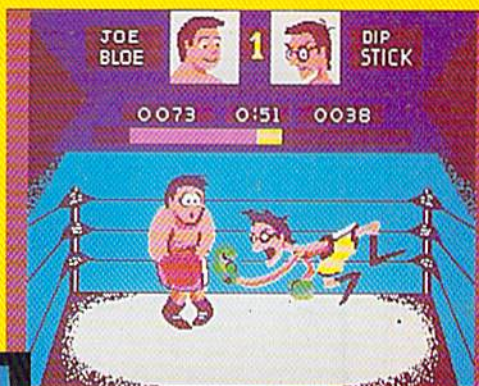
SubLogic  
Commodore 64  
\$39.95

Every offensive and defensive player has individual physical attributes for an extra dash of realism. How well your play works depends on who's covering whom. Make substitutions from the bench.

## Fight Night

Accolade  
Commodore 64  
\$29.95

Boxing with a humorous cartoon slant: Your opponents resort to foul play if a match is too close. Watch for low blows, stomach kicks and other illegal maneuvers.



**Fight Night**



**Great American Road Race**

## Bop 'n Wrestle

Mindscape  
Commodore 64  
\$29.95

If you like wrestling on television, you'll love it on your monitor. Climb into the ring with ten of nastiest, dirtiest wrestlers around, and execute Flying Body Press, Atomic Drop, Pile Drive and Soplex.

## Tenth Frame

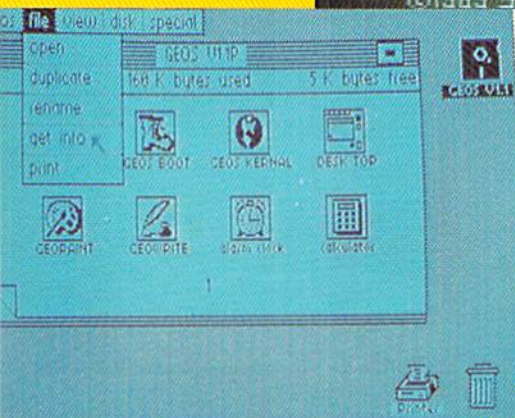
Access Software  
Commodore 64  
\$39.95

Just like league night at local lanes. Up to eight players can aim to strike in contest that sports realistic 3-D graphics and exacting sound effects. Best of all, computer keeps score.



# THE BEST OF PRODUCTIVITY SOFTWARE

**The Newsroom**



**GEOS**



**Planner's Choice**

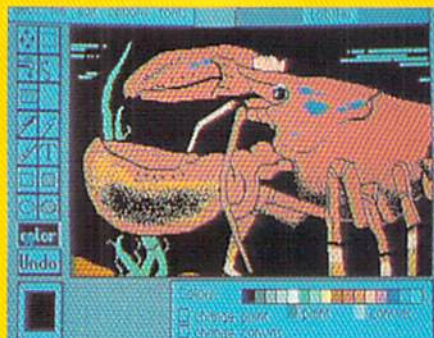


**GARY V.  
FIELDS**

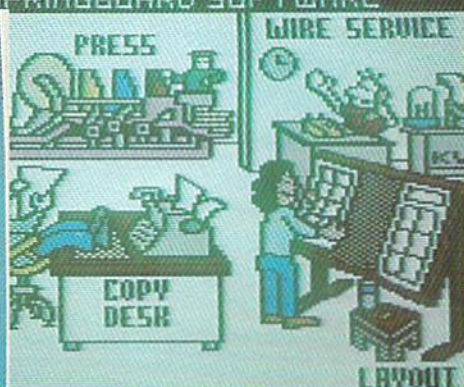
## **GEOS**

Berkeley Softworks  
Commodore 64  
\$59.95

Creates desk-top environment of menus, icons and windows. Includes *geoPaint*, *geoWrite*, calculator, note pad, alarm clock, photo and text albums, and preference manager.



**GEOS**



**The Print Shop Companion**

## **Personal Choice Collection**

Activision

Commodore 64

\$99.95

Integrated word processing, data base and spreadsheet. Also contains 50,000-word spell checker. Comes with clear and expanded manuals. Improved version of original Creative Software titles.

## **The Newsroom**

Springboard Software

Commodore 64

\$49.95

Perfect for school, club or business newsletters as well as personal needs. Includes typesetting, graphic editor and telecommunication capabilities. Predesigned art gives a professional look. Additional art available.

## **Pocket Writer 64**

Digital Solutions

Commodore 64

\$39.95

Word processor uses either 40- or 80-column displays and either sequential or program files. Help screens, logical design and multiple printer support.

## **The Management Edge**

Info Designs

Commodore 64

\$79.95

Electronic management advisor suggests management tactics to improve work relationships and increase productivity. Includes print-out option.

## **SynCalc Templates Disk**

Synapse/Broderbund

Commodore 64

\$19.95

Contains 22 ready-to-use templates for use with Synapse's *SynCalc* spreadsheet program. Perfect for novice spreadsheet users.

## **Bank Street Filer**

Broderbund

Commodore 64

\$49.95

Flexible data base uses multiple windows and menus to define options. Manual is complete and easy to understand.

## **The Print Shop Companion**

Broderbund

Commodore 64

\$34.95

Expands the power of *The Print Shop*. Includes calendar maker, font editor and more powerful graphic editor and creature maker. Prints graphics from commercial software.

## **The ELF System**

CodeWriter

Commodore 64

\$40

Create customized BASIC programs for business or pleasure. ELF (Easy Language Form) system is easy to use, well documented and dependable.

## **The Accountant**

KFS Software

Commodore 128

\$149.95

Complete small business accounting system which includes financial, general journal, payroll and customer statements. Uses 80-column display. For businesses with fewer than 20 employees.



## Sylvia Porter's Personal Financial Planner

Timeworks

Commodore 64  
Commodore 128  
\$59.95/\$69.95

Four integrated money-management programs to help target and meet financial goals. Logical and professional. The 128 version takes advantage of the 128's expanded keyboard and 80-column display.

## Superscript 128

Precision/Progressive Peripherals & Software

Commodore 128  
\$79.95

Business-quality programmable word processor (design to suit needs). Works with either 40- or 80-column displays, has advanced features like calculations, labels, column moves and screen preview. Spell checker is expandable. Can be integrated with *Superbase 128*, a data base from the same company.

## Vizastar 128

Solid State Software  
Commodore 128  
\$119.97

Integrated data base, spreadsheet and graphs. Logically designed and well documented. Takes advantage of the 128's power.

## Word Writer 128

Timeworks

Commodore 128  
\$69.95

Combines power with choice of pull-down menus or direct keystroke commands. Features on-screen formatting, help screens, calculator and multiple-text displays (underline, boldface, italic and scripts). Comes with the best spell checker for any Commodore computer. Supports most printers and is compatible with Timeworks' *Swiftcalc 128* and *Data Manager 128*.

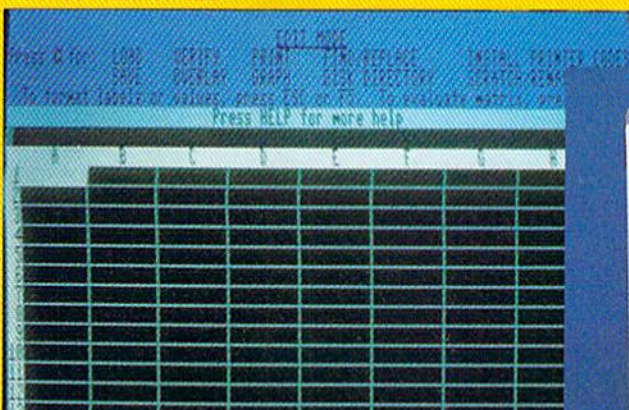
## Superbase 128

Precision/Progressive Peripherals & Software

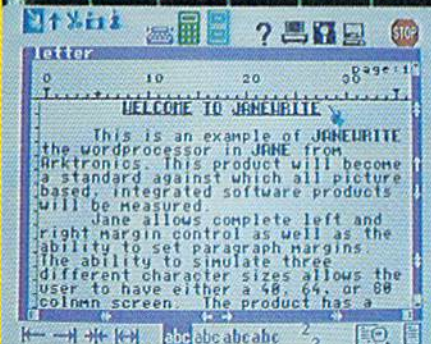
Commodore 128  
\$99.95

Business-quality programmable data base. Can be programmed to perform complex searches and sorts up to 34 fields deep. Supports spreadsheet-like math functions and has easy-to-use report, label and mailing list generators. Compatible with *Superscript 128*.

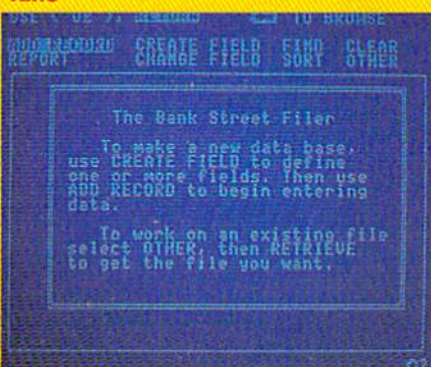
## Pocket Planner 128



Partner 128



Jane



Bank Street Filer

## Pocket Planner 128

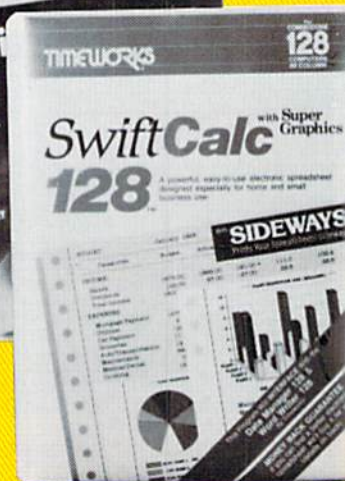
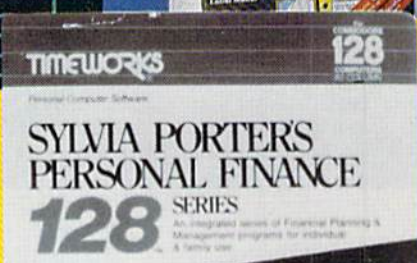
Digital Solutions  
Commodore 128  
\$49.95

Full-featured 25,000-cell spreadsheet with 16-digit accuracy and help screens. Includes professional graph capabilities and will print wide sheets sideways. Supports most printers and is compatible with Digital Solutions' *Pocket Writer 128* and *Pocket Filer 128*.

## Partner 128

Timeworks  
Commodore 128  
\$59.95

Creates a complete office environment including mini-word processor and data base, multifunction calculator, appointment calendar and memo pad. Takes advantage of 128's 80-column display, expanded keyboard, and fast disk access. Supports most popular printers.



## Swiftcalc 128

Timeworks  
Commodore 128  
\$69.95

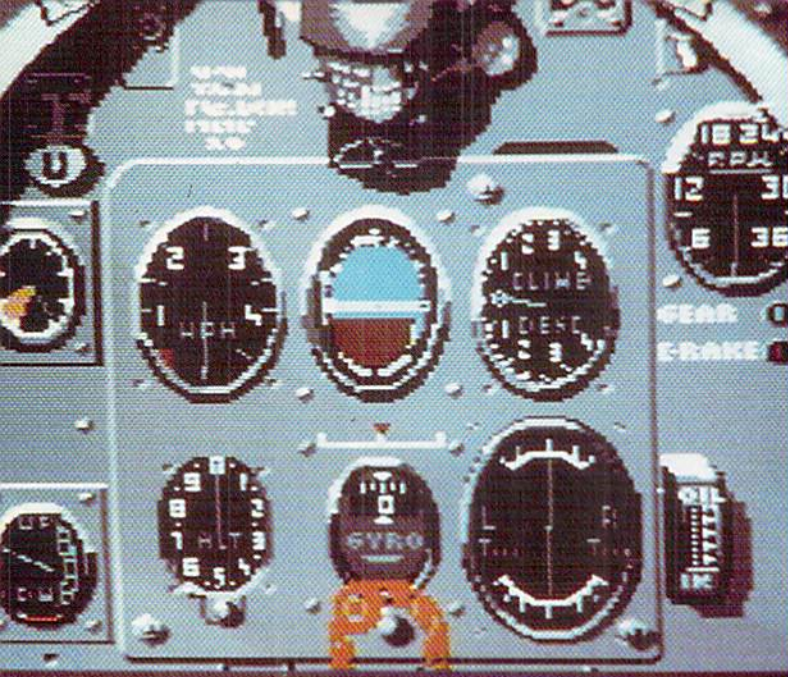
Easy to use 250-row-by-250-column spreadsheet. Supports pie, vertical, bar, 3D graphs, and sideways printing. Supports all math functions, macro commands, plus word processor-like editing features as well as windows and help screens. Interfaces with Timeworks' *Word Writer 128* and *Data Manager 128*.

## Jane

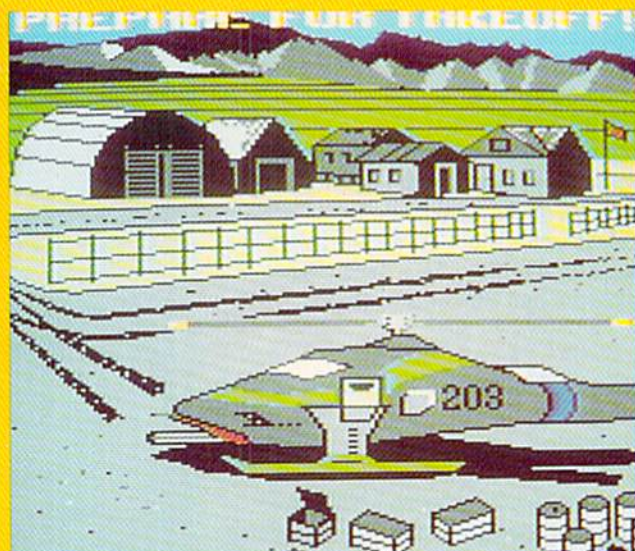
Commodore Business Machines  
Commodore 128  
\$49.95

Three integrated icon-driven mouse/joystick-activated programs: word processor, data base and spreadsheet. Manual is complete and easy to understand. Works with either monitor or television.

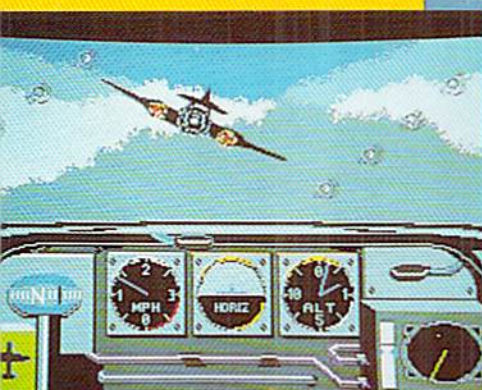




**Spitfire 40**



**Infiltrator**



**Ace of Aces**



**Dam Busters**

# THE BEST OF SIMULATIONS SOFTWARE



**ERVIN  
BOBO**

## **Dam Busters**

Accolade  
Commodore 64  
\$29.95

Faithful recreation of both the movie and real-life raid. Multiple screens for combat stations and action test skills.

## **Conflict in Vietnam**

MicroProse  
Commodore 64  
Price not available  
The past 30 years in Vietnam, symbolized by five turning-point battles in which you are commander. Excellent graphics and sound.

## **Ace of Aces**

Accolade  
Commodore 64  
Price not available  
Undersea action in Gato-class submarine. Multiple screens, charts, radar and an enemy who outnumbers you five to one at the least.

## **Infiltrator**

Mindscape  
Commodore 64  
\$24.95  
Combined helicopter/ground mission. Incorporates features from other popular games.

## **Alter Ego**

Activision  
Commodore 64  
\$39.95  
Though some may argue the point, I maintain that this one simulates life. If you've ever wanted second chance, this is it. Available in male and female versions.

## **Jet**

SubLogic  
Commodore 64  
\$39.95  
Fly an F-16 from ground base or an F-18 from a carrier. Choose combat missions on several levels or just enjoy scenic flight. Then, of course, try to land.

## **Spitfire 40**

Avalon Hill Microcomputer Games  
Commodore 64  
\$35  
World War II again, this time as the pilot of the plane that won the Battle of Britain. Multiple screens enhance challenge.

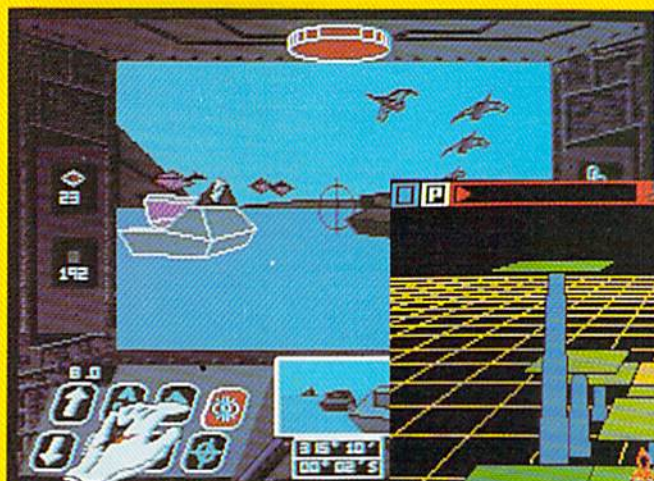
## **Quake Minus One**

Mindscape  
Commodore 64  
\$24.95  
As commander of an undersea tank, you battle bad guys for control of the main computer before time runs out.

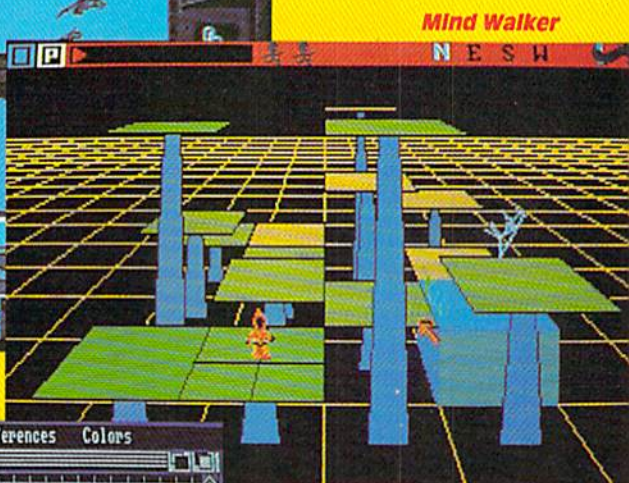


# THE BEST OF AMIGA SOFTWARE

ERVIN  
BOBO



Arctic Fox



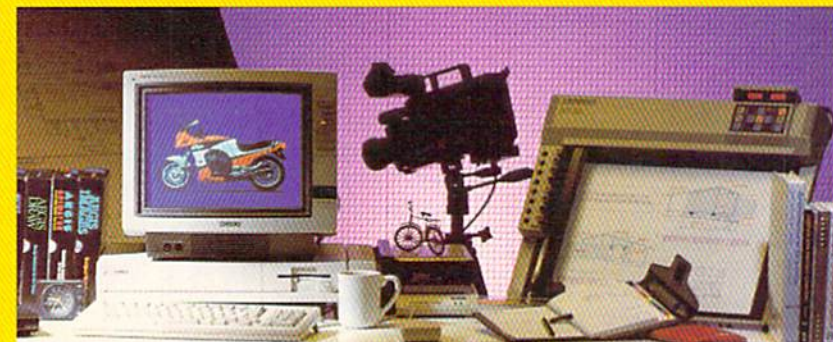
Mind Walker



Aegis Draw



The Music Studio



Aegis Images

## Transformer

Commodore Business Machines  
\$99.95  
Software that allows you to run PC-DOS software. 5.25 disk drive required.

## Aegis Images/Animator

Aegis Development  
\$139.95  
Packaged together, *Images* is a super painting program, while *Animator* gives you the ability to duplicate animation similar to what you see on television.

## Online!

Micro Systems Software  
\$69.95  
A telecommunications package easy enough for beginners, sophisticated enough for experts.

## The Music Studio

Activision  
\$49.95  
Amiga version takes advantage of superior sound, including stereo.

## Aegis Draw

Aegis Development  
\$199.95  
Computer-aided design (CAD) with zooming and multiwindowing, plus many of features found in *AutoCAD* for MS-DOS computers.

## Deluxe Video

Electronic Arts  
\$99.95  
Superb animation and titling, using the *Deluxe Video* library or images created with *Deluxe Paint*.

## Mind Walker

Commodore Business Machines  
\$49.95  
Best graphics ever in a game. Journey through the mind of a madman.

## Arctic Fox

Electronic Arts  
\$39.95  
Simulated tank combat on a 3D Arctic battlefield, complete with thunderstorms, blizzards and stereo sound.

## VIP Professional

VIP Technologies  
\$199.95  
Power and workings of *Lotus 1-2-3* on Amiga. Includes chart package.

## Deluxe Print

Electronic Arts  
\$49.95  
Even if you don't have a color printer, it's the best of its type. Full-time preview as well as cut and paste.



## THE BEST OF AMIGA HARDWARE



LOUIS R.  
WALLACE

### **Comspec 2 Megabyte RAM card**

Comspec  
\$899

Expands memory up to two-and-a-half million bytes of RAM. Installs easily and worked like a champ with all versions of the operating system.

### **Netch 68881 Floating- Point Coprocessor Board**

Netch  
\$479

Contains Motorola floating-point coprocessor.

### **20 MB Hard Disk Drive**

The Micro Forge  
\$1229.95

Best of the currently available hard drives. Uses single-slot connection to main expansion bus. Not Direct Memory Access.

### **Digi-View**

NewTek

\$199.95 (camera not included)

Graphics digitizer that captures full-color devices with black-and-white camera. Allows all 4,096 colors to be used at once.



*Comspec RAM card*

### **Futuresound**

Applied Visions  
\$175

Record, store and play back sounds. Comes with a microphone and cables. Hooks up to printer port. Multitrack recordings and playback is possible. Comes with very good software for sampling and well written manual.

### **Sound Sampler**

Mimetics  
\$99

A sound synthesizer to sample sound from microphones or line input. Comes with manual and software. Designed to work with Mimetics' *MIDI Studio* or other IFF-compatible software.

### **Stereo Sound Digitizer**

The Micro Forge  
\$344.95

True stereo digitizer, using two-line input from an external source such as a stereo. Allows variable recording times and sampling rates.

### **4-Megabyte Pow\*r\*Card**

RS Data Systems  
\$1245

RAM card that comes in two, four and eight megabytes. (I looked at the four-megabyte card.) Uses 86-pin format and works with Micro Forge single-slot adaptor. Currently largest amount of RAM available for Amiga.

### **68020/68881 Board**

Computer Systems Associates  
\$1480

Replaces the 68000 chip for higher-speed 32-bit 68020 microprocessor running at 14.4 Mhz. Also has optional 512K on-board RAM.

## THE BEST OF HARDWARE

MORTON A.  
KEVELSON



### **Spartan**

Mimic Systems  
Commodore 64  
\$299

Turns the 64 into an Apple II+, complete with a 6502 microprocessor, 64K of RAM and eight Apple peripheral card slots. Also get a DOS card which turns the 1541 into an Apple-compatible disk drive. Still have access to all the 64's features and disks. Built-in four-slot extension to the 64 cartridge port.

### **Super Graphix Printer Interface**

Xetec  
Commodore 64  
\$99.95

Provides 100% Commodore 1525 printer emulation when used with compatible dot matrix printer. 8K RAM on-board. Built-in near letter-quality fonts plus 30 additional fonts. Font editor for creating your own.

### **Capture**

Jason-Ranheim  
Commodore 64  
\$39.95

Plug-in cartridge takes a disk picture of the 64's RAM. Used with the company's Promenade *EPRM* programmer (\$99.95) and CPR cartridge kit (\$29.95), a running program may be put into plug-in auto-start cartridge.

### **Serial Box**

R.J. Brachman Associates  
Commodore 64  
\$79.95

Serial port printer buffer which plugs into the 64's disk drive port ahead of a Commodore printer or printer interface. Accommodates several bit-map screen dumps or any memory-resident text files.





**Serial Box**

### 21-Second Backup

VG Data Shack  
Commodore 64

\$39.99

Creates a parallel data path between the 64 and one or two 1541 disk drives. Cable and socket.

### Diablo C-150 Color Printer (now known as Xerox 4020)

Xerox  
Amiga

\$1295

Color ink-jet printer with Centronics parallel connector. Driver routines included with computer and support for all 4,096 colors.

### Okidata 120

Okidata  
VIC 20

Commodore 64

Commodore 128

Under \$300

Commodore 1525 (MPS-801) compatible printer with speed of 120 characters per second.

### Toshiba P351 (3-in-One)

Toshiba

All Commodore computers

\$1699

Speed of 288 characters per second with built-in, downloadable, and cartridge fonts. Both Centronics parallel and RS232 ports.

### Epyx 500XJ

Epyx

Commodore 64

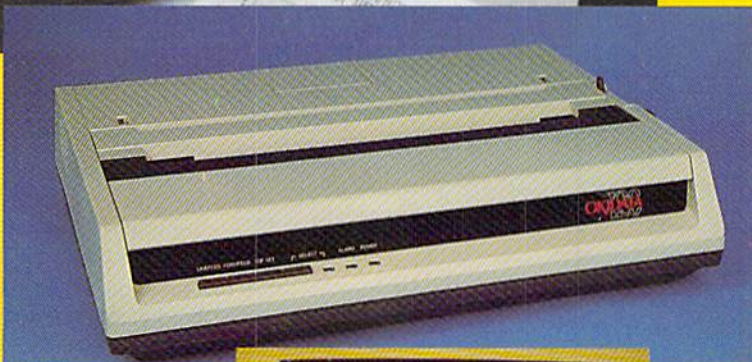
Commodore 128

Price not available

High-performance joystick that carries a five-year, ten-million shot warranty.



**Xerox 4020**



## THE BEST OF CHILDREN'S/ EDUCATIONAL SOFTWARE

KELLEY M.  
ESOE



### Alter Ego

Activision

Commodore 64

\$49.95

Role-playing game in which you decide what actions your selected personality will take in response to life events and situations. Experience the results of decisions without actually having to pay the piper. Recommended for mature 12 year-olds and up.



**The Halley Project**

### The Body in Focus

CBS Interactive Learning

Commodore 64

\$39.95

A fantastic voyage through eight major systems of the human body. Technically accurate and totally engrossing. Superb graphics, animation and sound. For ages 7 through 70.

### The Halley Project

Mindscape

Commodore 64

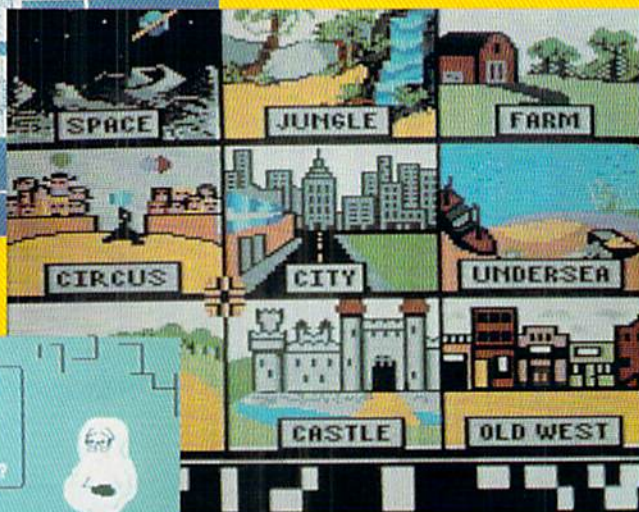
\$39.95

Successfully complete ten fascinating training expeditions into the outer reaches of the solar system and you become eligible for the ultimate interstellar space mission: The Halley Project. Exceptional realism. For ages 12 and up.





*Alter Ego*



*Just Imagine*



*Wiztype*

## Kermit's Electronic Storymaker

Simon & Schuster  
Commodore 64  
\$29.95

Using words and phrases from the accompanying book, a preschooler creates single-sentence stories which Kermit and his pals simultaneously enact on-screen. Teaches vocabulary and proper syntax.

## Playwriter: Castles and Creatures

Woodbury  
Commodore 64  
\$39.95

Castles and creatures set the stage—you select and name heroes and villains, decide upon actions and deeds, and chapter by chapter create your own medieval storybooks, which can then be printed out, illustrated, and bound with the included materials.

## Just Imagine

Commodore Business Machines  
Commodore 64  
\$25

Another storywriting program. The child writes and illustrates his or her own animated stories using preset environments, characters, objects and music. Great imagination builder for ages 7 on up.

## Wiztype

Sierra On-Line  
Commodore 64  
\$24.95

Top-notch learn-to-type program for children 8 and up. Children have so much fun playing with the wizard, they hardly notice they're learning valuable skills.

## Proteus

Research Design Associates  
Commodore 64  
\$79.95

A thought processor, outliner and freestyle writing tool. Collect, organize and probe ideas using methods of thought exploration.

## Remember!

Designware  
Commodore 64  
\$79.95

Enter facts you want to memorize—this program presents them back to you in ways that build association. Effective and powerful study aid for junior-high school age and up.

## Rocky's Boots

The Learning Company  
Commodore 64  
\$34.95

Build an endless variety of electronic machines by wiring together various on-screen components. At the same time, learn fundamentals of computer logic, manufacture and construction. Recommended for 9 and up, but even a 7 year-old can enjoy the building process.

# THE BEST OF HOME APPLICATIONS

DAN GUTMAN



## The Works

First Star Software  
Commodore 64  
\$49.95

Thirteen useful programs on a single disk. Perfect first program to give a novice.

## The Newsroom

Springboard Software  
Commodore 64  
\$49.95

Desktop publishing comes home. Create your own newspaper with different typefaces, graphics and layouts. Then print it or send it over telephone lines.

## GEOS

Berkeley Softworks  
Commodore 64  
\$59.95

Puts the desktop environment on-screen. Icons and windows make using a computer easier for experts and more intuitive for beginners.

## Deluxe Paint

Electronic Arts  
Amiga  
\$79.95

Most amazing graphics. Painting, smearing and stamping images all over the screen creates incredible images.

## Deluxe Video

Electronic Arts  
Amiga  
\$99.95

The computer and VCR get married. Create near-professional quality video presentations with wipes, fades, dissolves and other special effects.



I, A RESIDENT OF THE STATE OF  
COUNTY OF , DECLARE THAT THIS IS MY  
WILL.

FIRST: I revoke all wills and  
codicils that I have previously made.

SECOND: If any beneficiary of any  
specific personal property bequest made  
by this will fails to survive me by 45  
days, and no alternative beneficiary has  
been named in this will to receive  
that bequest, such bequest shall pass  
into my residuary estate.

//  
//

**Will Writer**

## The Toy Shop

Broderbund  
Commodore  
\$59.95

Create a personalized jet dragster on-  
screen, print it out, and make it actually  
work. All kinds of toys.

## Certificate Maker

Springboard Software  
Commodore 64  
\$49.95

Print your own "Couch Potato Award" or  
any of more than 200 other serious and  
not-so-serious certificates. You pick the  
border, typeface and personalized  
message.

## Bodylink

Bodylog  
Commodore 64  
\$139.95

All-purpose black box of our times. A  
simple device used to reduce stress,  
build and coordinate muscles, and give  
an aerobic workout.

## Voice Master

Covox  
Commodore 64  
\$89.95

Hum a tune into a microphone and  
watch sheet music appear on-screen.  
Then edit and print out. Be a composer  
even if you can't play an instrument or  
read music.

## Will Writer

Nolo Press  
Commodore 64  
\$39.95

Write and print out a legal last will and  
testament in about 15 minutes. Easier  
and cheaper than paying a lawyer.

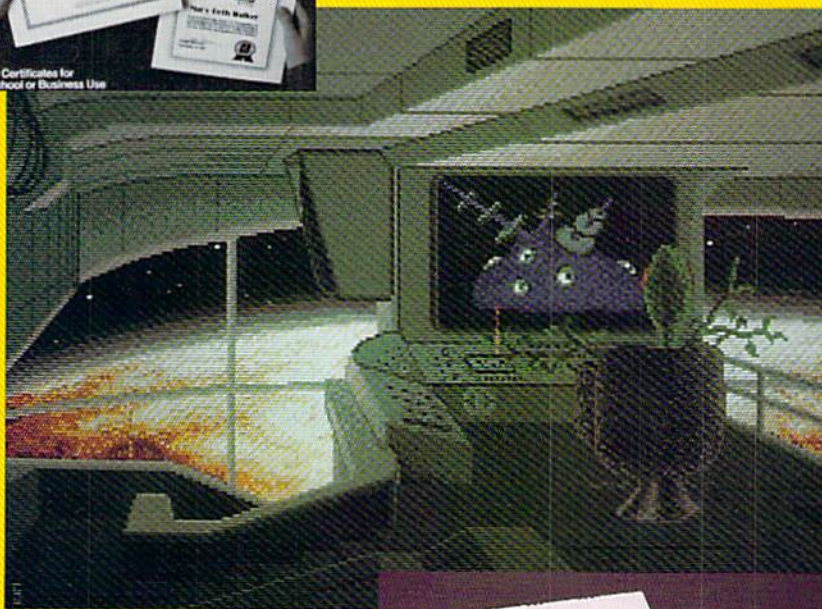
## Easy Guitar

DJ Software  
Commodore 64  
Price not available

Computer shows how to tune a guitar  
and make the most of commonly used  
chords. Even provides backup while you  
wall away on lead.



**Deluxe Paint**



**Deluxe Paint**



**Bodylink**







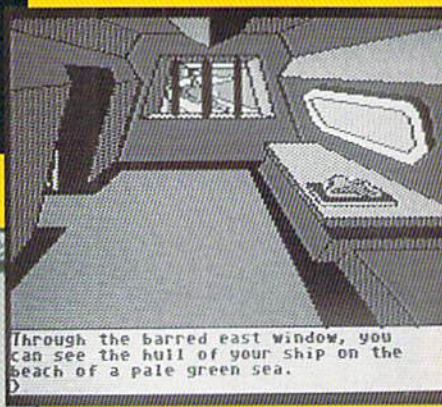
Moebius



Moebius



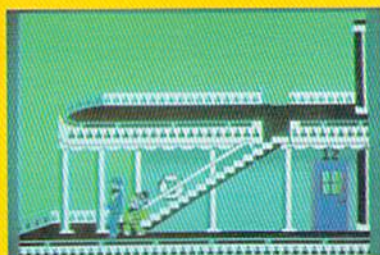
Ultima IV



Oo-topos



The Bard's Tale



Murder on the Mississippi

# THE BEST OF ADVENTURE GAMES

SHAY ADDAMS



## Oo-topos

Polarware  
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Stranded on an alien planet, you must collect parts needed to repair your ship. Clean graphics and smart parser.

## Ballyhoo

Infocom/Activision  
Commodore 64  
\$39.95

Instead of being a detective, you're an ordinary citizen out to solve a kidnapping at the circus. All text, all fun.

## Ultima IV: Quest of the Avatar

Origin Systems  
Commodore 64  
\$59.95

A Lord British epic in which you don't have to kill an evil wizard at the end. Great animation and sound effects. Lots of magic, mazes and puzzles.

## AutoDuel

Origin Systems  
Commodore 64  
\$49.95

Best blend of action and role-playing. Build cars, equip them with weapons, fight others in demolition derbies. Then hit the road hard to find clues that lead to Mr. Big.

## The Bard's Tale

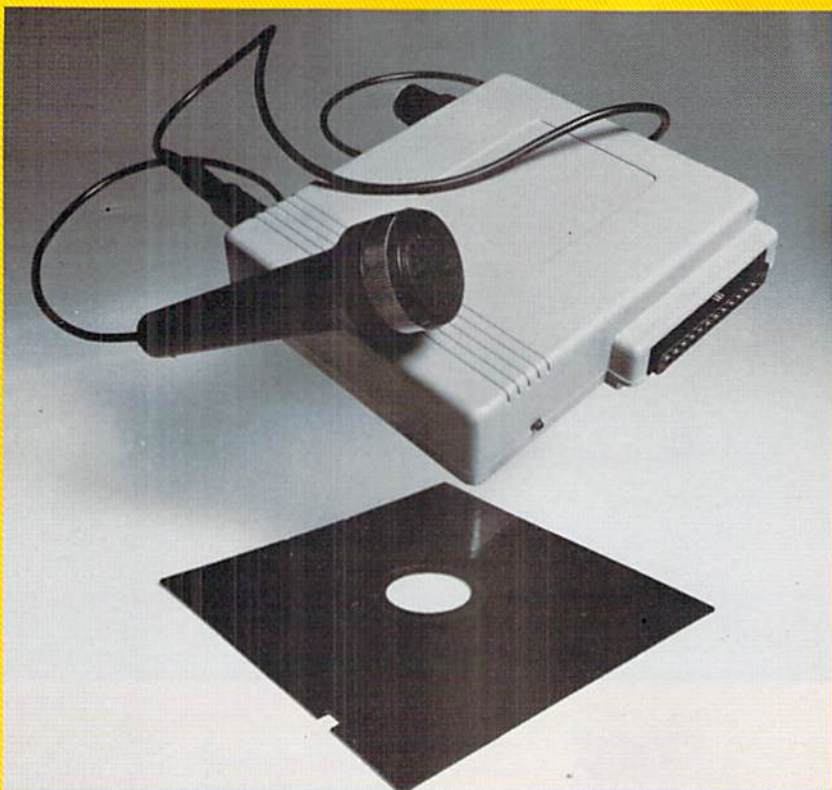
Electronic Arts  
Commodore 64  
\$39.95

Hardest role-playing game of the year. Six-character party, gorgeous color graphics with spot animation. Detailed magic and combat system.









**Sampler-64**

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BROOKS**

## Dr. T's Keyboard Controlled Sequencer

Dr. T's Music Software  
Commodore 64  
Commodore 128  
\$150/\$225

With appropriate hardware interface, the best MIDI sequencer for controlling a new breed of electronic music synthesizers. 64 version included free with 128 version, or available separately.

## Casio CZ-101

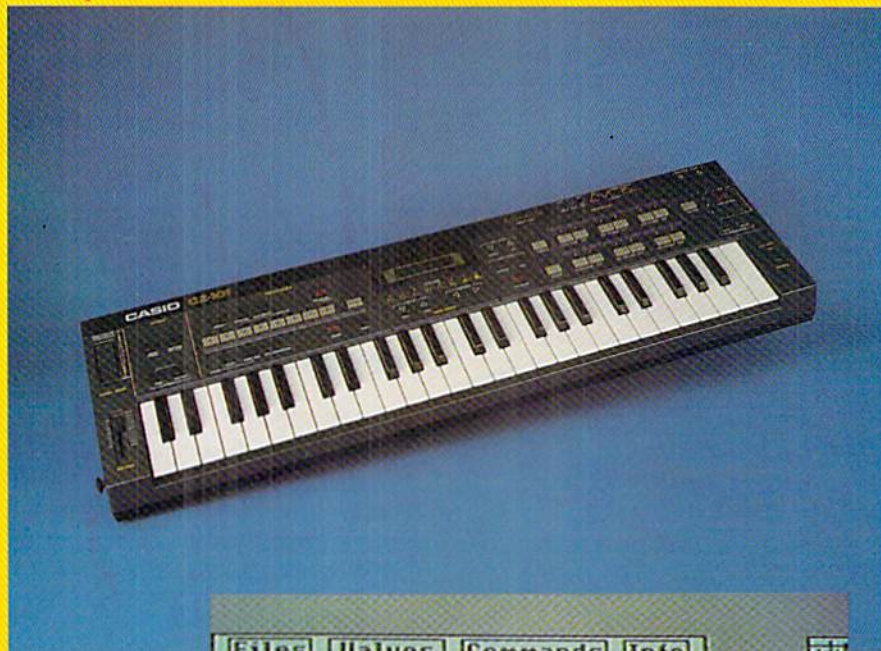
Casio  
Price not available  
Not Commodore-specific. Four-octave MIDI keyboard offers four independent MIDI-programmable voices and high quality sound. Other models in CZ series offer programming compatibility and additional features.

## Sampler-64

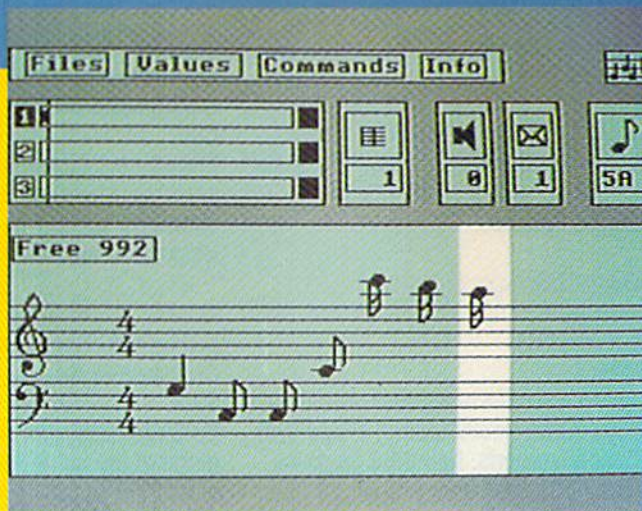
Micro Arts Products  
Commodore 64  
Price not available  
Digital sound sampling. Play, sing or talk into a microphone and turn your 64 into a digital sampling keyboard. Edit the resulting sound, compose a piece, and save it on disk. Library of digitally sampled drum sounds available.

## Advanced Music System

Firebird  
Commodore 64  
\$79.95  
Compose and edit music from the computer or MIDI keyboard. Hear through the SID chip up to three voices, through a MIDI synthesizer up to six voices. Graphics are outstanding. Compatible hardware interface required.



**Casio CZ-101**



**Advanced Music System**



# Companies

## Access

2561 South 1560 West  
Woods Cross, UT 84087  
801-298-9077

## Accolade

20833 Stevens Creek Boulevard  
Cupertino, CA 95014  
408-446-5757

## Activision

2350 Bayshore Frontage Road  
Mountain View, CA 94043  
415-960-0410

## Aegis Development

2210 Wilshire #277  
Santa Monica, CA 90403  
213-306-0735

## Applied Visions

15 Oak Ridge Road  
Medford, MA 02155  
617-488-3602

## Avalon Hill

### Microcomputer Games

4517 Harford Road  
Baltimore, MD 21214  
301-254-5300

## Berkeley Softworks

P.O. Box 57135  
Hayward, CA 94545  
415-644-0883

## Bodylog

34 Maple Avenue  
Armonk, NY 10504  
914-273-6480

## Broderbund

17 Paul Drive  
San Rafael, CA 94903  
415-479-1700

## Caslo

P.O. Box 1386  
Fairfield, NJ 07007  
201-575-7400

## CBS Interactive Learning

One Fawcett Place  
Greenwich, CT 06836  
203-622-2500

## Codewriter

7848 N. Caldwell Avenue  
Niles, IL 60648  
312-647-1270

## Commodore Business Machines

1200 Wilson Drive  
West Chester, PA 19380  
215-431-9100

## Computer Systems Associates

7564 Trade Street  
San Diego, CA 92121

## Comspec

153 Bridgeland Avenue, Unit 5  
Toronto, Ontario M6A 2Y6 Canada  
416-787-0617

## Covox

675D Conger Street  
Eugene, OR 97402  
503-342-1271

## Datasoft

19808 Nordhoff Place  
Chatsworth, CA 91311  
818-886-5922

## Designware

185 Berry Street  
San Francisco, CA 94107  
415-546-1866

## Digital Solutions

30 Wertheim Court Unit 2  
Richmond Hill, Ontario  
L4B 1B9 Canada  
416-731-8775

## DJ Software

10636 Main St., Suite 414  
Bellevue, WA 98004  
206-883-9257

## Dr. T's Music Software

66 Louise Road  
Chestnut Hill, MA 02167  
617-244-6954

## Electronic Arts

1820 Gateway Drive  
San Mateo, CA 94404  
415-571-7171

## Epyx

1043 Kiel Court  
Sunnyvale, CA 94089  
408-745-0700

## Firebird

P.O. Box 49  
Ramsey, NJ 07446  
201-934-7373

## First Star Software

18 East 41st Street  
New York, NY 10017  
212-532-4666

## Info Designs

445 Enterprise Court  
Bloomfield Hills, MI 48013  
313-334-9790

## Jason-Ranheim

1805 Industrial Drive  
Auburn, CA 95603  
916-823-3284

## The Learning Company

545 Middlefield Road, Suite 170  
Menlo Park, CA 94025  
415-328-5410

## MicroProse

120 Lakefront Drive  
Hunt Valley, MD 21030  
301-667-1151

## Micro Arts Products

P.O. Box 2522  
Philadelphia, PA 19147  
215-336-1199

## The Micro Forge

398 Grant Street NE  
Atlanta, GA 30312  
404-688-9464

## Micro Systems

4301-18 Oak Circle  
Boca Raton, FL 33431  
800-327-8724

## Mimetics

P.O. Box 60238, Station A  
Palo Alto, CA 94306  
408-741-0117

## Mimic Systems

11-12 Fort Street, Floor 6E  
Victoria, British Columbia  
V8V 4V2 Canada

## Mindscape

3444 Dundee Road  
Northbrook, IL 60062  
312-480-7667

## NewTek

701 Jackson, Suite B3  
Topeka, KS 66603  
913-354-9332

## Nolo Press

950 Parker Street  
Berkeley, CA 94710  
415-549-1976

## Origin Systems

340 Harvey Road  
Manchester, NH 03103  
603-644-3360

## Polarware

P.O. Box 311  
Geneva, IL 60134  
312-232-1984

## Progressive Peripherals & Software

464 Kalamath Street  
Denver, CO 80204  
303-825-4144

## Research Design Associates

P.O. Box 848  
Stony Brook, NY 11790  
516-928-5700

## R. J. Brachman Associates

P.O. Box 1077  
Havertown, PA 19083  
215-622-5495

## RS Data Systems

7322 SW Freeway  
Houston, TX 77074  
713-988-5441

## Sierra On-Line

Sierra On-Line Building  
Coarsegold, CA 93614  
209-683-6858

## Simon & Schuster

Gulf & Western Building  
New York, NY 10023  
212-333-5800

## Solid State Software

1125 E. Hillside Boulevard, Suite 104  
Foster City, CA 94404  
415-341-5606

## Spectrum-Holobyte

1050 Walnut Suite 325  
Boulder, CO 80302  
303-443-0191

## Springboard

7808 CreekrIDGE Circle  
Minneapolis, MN 55435  
612-944-3915

## Strategic Simulations

1046 North Rengstorff Avenue  
Mountain View, CA 94043

## Strategic Studies Group

1747 Orleans Court  
Walnut Creek, CA 94598  
415-932-3019

## SubLogic

713 Edgebrook Drive  
Champaign, IL 61820  
217-359-8482

## Timeworks

444 Lake Cook Road  
Deerfield, IL 60015  
312-948-9200

## VG Data Shack

5625 Grand-Allee Boulevard  
Local 05  
Buossard, Quebec  
J47 3G3 Canada  
514-445-9663

## VIP Technologies

132 Aero Camino  
Santa Barbara, CA 93117  
805-968-9567

## Woodbury Software

127 White Oak Lane  
Old Bridge, NJ 08857  
201-536-6382

## Xetec

2804 Arnold Road  
Salina, KS 67401  
913-827-0685



## Public Domain Software for the Amiga

What kind of software are you looking for? Graphics programs, terminal programs, text formatters, utilities, screen dumps, or a game—they're all available in the public domain library of your local user's group. There are hundreds of programs of all types, all available at no charge to you.

Public domain software has been around for quite a while. In the sixties, I used a time-sharing terminal at a major aerospace company. In the evening hours, we would play a variety of games, all written by programmers just for the fun of it, and made accessible to anyone who wanted to use them. This tradition of giving away usable software continues today, supported by programmers who want to release early versions of commercial programs they are working on or utilities they created for their own use, or who just want an excuse to exercise their programming skills.

Software of this type may be copyrighted, and often has a notice attached granting the right to copy the software and give it away, but not to sell it. The author often has his or her name displayed somewhere in the program. Occasionally public domain software is of the user-supported type, which I'll explain later.

Public domain software falls into a variety of categories. The first is an unsupported, undocumented, buggy-code type I call slopware. This type of software is not very useful unless you have some programming skills, or are interested in testing every key on your keyboard to find out which key does what. The next type is documented software. Some of these programs for the Amiga come with Notepad files that you can just click on and read. Others have document files (filename.doc) that you can read using the TYPE command from the CLI (type filename.doc). A few have instructions available from a pull-down menu, and I've seen one that uses requester boxes to supply documentation. This type of software is usually very reliable, since any programmer who takes the time to sup-



*The tradition of giving away usable software continues today, supported by programmers who...just want an excuse to exercise their programming skills.*

ply documentation is usually committed to producing quality work.

User-supported software, sometimes called shareware, is copyrighted software, distributed in a fashion similar to public domain software. The author has decided not to sell the software, but in either the title screen or the documentation you will find a request that if you like the program and find it useful, you send a donation to the author. If you find software of this type and use it, I encourage you to send the donation. If it's good software, it's worth paying for, and the fees are usually very reasonable.

There is a lot of good public domain software available for the Amiga. One reason is that very early on there was excellent documentation available to programmers. This made developing software much easier. Many programmers

took advantage of this support to make trial runs—tests of concepts and ideas as they were orienting themselves to the new machine. Many of these trial runs became today's public domain software.

Much of the software written for the Amiga is done in C. This is a powerful, highly transportable programming language. Many developers have used it in the past on IBM PC's, and found it easy to port programs written in C over to the Amiga. With just a little fine tuning, these programs ran. At first, developers used this path to create programming utilities for their own work, but soon a variety of other software began to migrate to the Amiga through the public domain.

A large portion of the public domain software for the Amiga is composed of graphics programs. It's important to recognize the effect the IFF standards have had in making graphics information portable across different programs. This has spurred the creation of dozens of graphics utilities that all depend simply on finding a picture file they can use.

There is also a significant quantity of instructional software in the public domain. This type is created by programmers who are interested in sharing what they have learned about programming on the Amiga. Small routines for accomplishing various tasks, tricks for solving complicated problems, standards for creating and storing data, and explanations of particular functions can all be found.

I spent a week browsing through the public domain library of the San Francisco Commodore User's Group. My thanks to them for their assistance. The pro-



# THE STANDARDS by which the others are judged...

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## AMIGA UPDATE

grams I've found come from all over the country. Some are available on electronic bulletin boards (BBS's), and most can be obtained from your local user's group. A few user's groups and other organizations make public domain disks available through mail order at a nominal fee. If you hunt, I'm sure you will be able to find many of the programs below.

Those marked with asterisks, in fact, are available on the Delphi telecommunications network. If you are a Delphi subscriber, you can download the programs from the Commodore Connection area. (If you would like information about Delphi, call 800-544-4005.)

All of the programs I'm about to describe I've used. They all work. Most have documentation of one sort or another. Most have icons associated with them, but a few need to be run from the CLI. As always, whenever you first use new public domain software, test it out using a duplicate disk. That way if the program eats your disk, you haven't lost anything important. Be certain you understand how a program works and what all of its functions are before you start relying on it for anything important.

The first category of programs I looked at were graphics programs. Some were demos of the Amiga's capabilities, and others were applications and utilities.

**Arrow3d**, written by Steve Beats. This program displays a rotating 3D image of a wire frame arrow. It runs from the CLI, and you should use the RUN command to create a new CLI for it to operate in.

**Setlace**, written by Bob Pariseau. Toggles you into interlaced mode. I was not able to find a way to untoggle though. Runs from the CLI.

**Halfbrite**, written by Bob Pariseau. This program will let you see if your Amiga is capable of displaying 64 colors in the low-resolution mode. Most machines produced after the first quarter were equipped with a new Denise chip that enabled this. Runs from the CLI.

**Blobs**, written by Peter Engelbrite. This is a variant of "Worms." Seven colored worms crawl around the screen. You can toggle them to chase the mouse pointer, and you can also toggle flash to cycle the colors. Runs from the CLI, but will multitask. Menu-driven, with a quit option. Very nice effect.

**Sparks\***, written by Scott Ballantyne. Line drawing demo that draws multicolored

lines on the screen. Similar to the line demo on Workbench, but much prettier. Runs from an icon. Menu-driven, with a quit option.

**Moire\***, written by Scott Ballantyne. Draws black-and-white moire patterns. Runs from an icon. Menu-driven, with a quit option.

**Colorful\***, written by Bob Pariseau.

---

*A large portion of public domain software for the Amiga is composed of graphics programs, but there is also a significant quantity of instructional software.*

---

This is a hold-and-modify demo. Displays 256 colors at the same time on the screen. Runs from an icon.

**Amiga3D\***, written by Barry Whitebook. This is a rotating three-dimensional sign with the word AMIGA floating above the front surface, rotating with it. As it rotates, the color of the word changes. Holding the right mouse button will stop the rotation. Runs from an icon, but if you use the icon to copy it, be sure to file copy the 3dobject file as well.

**Dazzle\***, written by Peter Engelbrite. In the same class as Polyscope. A symmetry autodrawing program with a lot of menu-driven options. You can toggle low or high resolution, a panel of pattern selections, pause, print, or exit. Hours of entertainment. Runs from an icon.

**Mandelbrot\***, written by Robert French and R. J. Mical. This program uses fractal geometry to draw shapes—incredible shapes that bring to mind ink-blot patterns. A simple explanation: Benoit Mandelbrot invented fractal geometry. Fractal geometry is used to describe, calculate and think about objects that are irregular in shape: snowflakes, clouds, dust particles, groups of people, lightning bolts, and so on. Fractals are very compli-

cated, and as a result, it takes a long time to calculate one—perhaps five minutes for this program. Once an image is drawn, you can save it to disk in IFF format, change the color palette, display the image 1/6 size, select a portion of the image and zoom in or out. This is a very nice program. There is a null set of documentation screens, complete control over the "seeds," and the ability to select most options from menus. The program runs from an icon.

The next set of programs are utilities. Some are very interesting, and others, well, once you've used them you'll wonder how you got along without them.

**Gfxmem0.4\***, written by Louis Makos. This is a graphical display of memory usage on the Amiga. Two bars are shown, one for chip memory (the first 512K) and one for fast memory (expansion over 512K). As memory is used up in your machine, a colored line moves across the bars, showing how much memory has been used, and how much is left. The display is updated dynamically. It runs from the CLI, but can be sized, moved and closed. There is another version with an icon.

**SeeILBM and ShowILBM\***, written by Electronic Arts. These two programs are part of a disk full of software released by Electronic Arts to the public domain. No individual programmer is credited. These are used to view IFF format pictures, and are icon driven. To use them, you click once on their icon, hold the SHIFT key down, and double click on the icon of the picture you want to view. ShowILBM displays the image for about ten seconds, and SeeILBM will keep the image up until you exit. If your picture does not have an icon associated with it, you can use these from the CLI. Just type either SeeILBM or ShowILBM, and space, and the name of your picture.

**DPSlide\***, written by Paul A. Biondo. This is a slideshow program for images in IFF format. It uses a text file to control the images displayed, the length of time they are displayed, and the manner in which they are created on the screen. You can use ED to create the text files, or a word processor that will create ASCII files. By editing your start-up sequence you can create disks that load and run a slideshow when inserted at the Workbench prompt. Highly recommended. Be sure to get the document file explaining the syntax for creating the control file.



## AMIGA UPDATE

**Screendump\***, written by Ned Konz. This is a user-supported program. It prints the entire contents of the front-most screen. It is icon loaded.

**Scrimper\***, written by Perry Kivolowitz. This is another screen-dump program, loaded from the CLI. Works in a similar fashion to Screendump.

**Browser\***, written by Mike Meyer. This is my favorite find so far. It is exactly what it sounds like, a utility for browsing through disks. It runs from the CLI, and creates a menu-driven environment for seeing what is on your disks. The first menu has three options: DF0, DF1, and RAM. Select one, and a new menu option appears: a list of subdirectories available on that device. Select one, and a new menu item appears: a list of files in that subdirectory. Directories are shown with a trailing slash. Select a document file, and it will be shown a screenful at a time. There are still some bugs in this one, but I love it anyway. It made writing this article much easier.

**StarTerm\***, written by Jim Nangano and Steve Plegge. This is an excellent terminal program for the Amiga. It solves

one of the most aggravating problems of transferring programs on the Amiga. When you use an XModem protocol to transfer programs, data is sent in chunks. If the last bits of data are not exactly large enough, null data is added to pad them to the same size at all the other chunks. The problem arises when the program is saved without removing the extra padding. Such programs will not run. Before StarTerm, you had to use a stripper utility to solve this problem. StarTerm handles this automatically when you use it for downloads. It has a phone number directory, allows you to assign strings to the function keys, and is generally of very high quality. StarTerm is icon-loaded. There are a separate document file and telephone file; be sure to copy them as well.

Finally I looked at a few programs written in BASIC. Some were written in ABASIC and some in AmigaBASIC.

**Monopoly**, written by David Addison. This version is written in ABASIC, and copyrighted by Parker Brothers. The graphics and sound effects are excellent. When you land on a railroad, a small train drives

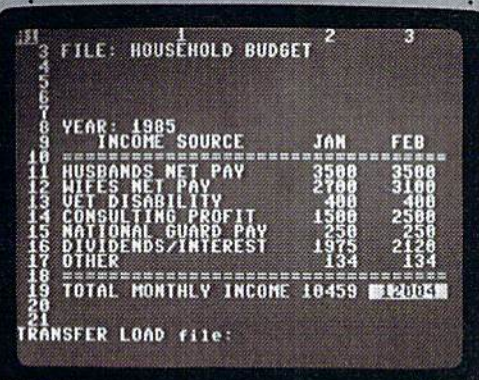
across the board. I suggest you copy a bootable version if you can, although the installation guide gives clear instructions. Mr. Addison has also written several other ABASIC programs, including Polyfractals and Polydraw.

**Palette Mixer\***, written by Enrique A. Gamez. This program is an excellent example of how to program graphics and color in AmigaBASIC. The program is distributed in listable form. It displays a color mixing board, with three sliding controls to mix colors. Mr. Gamez has also written a program called Coordinates, that displays the X and Y position of the mouse cursor in a dynamic display.

I've only touched the surface of the programs that are available for the Amiga in the public domain. I haven't discussed the programming aids, text formatters, disks full of text files, games, programming examples in languages like LISP and FORTH, and other languages that I found in looking through the public domain. The next time you go to a user's group meeting, check out their library. You'll find some real gems.

C

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1	2	3
FILE: HOUSEHOLD BUDGET		
YEAR: 1985		
INCOME SOURCE	JAN	FEB
HUSBANDS NET PAY	3500	3500
WIVES NET PAY	2700	3100
NET DISABILITY	400	400
CONSULTING PROFIT	1500	2500
NATIONAL GUARD PAY	250	250
DIVIDENDS/INTEREST	1975	2120
OTHER	134	134
TOTAL MONTHLY INCOME	10459	12004
TRANSFER LOAD file:		

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# C128 Spectacular

**C128** Spectacular is a short and simple program that takes advantage of the powerful BASIC 7.0 commands. It isn't a game or a utility. It simply demonstrates the ease and brevity of programming on the 128.

The idea originally came from a 15-line program in the *Commodore 128 Programmer's Reference Guide* on page 114. This program produces two rotating boxes. From that small beginning, I changed the position of the two original boxes, added two more rotating boxes, eight sprites and seven bands of color in the center with a DO-LOOP to continuously change their color.

Once you have typed in this short program and run it as is, I'm sure you can come up with variations of your own to make it even better than my version. At any rate, I hope this will inspire you to create your own.



## Show off your 128's BASIC 7.0.

Here is a short program description.

- Line 12: Sets color and graphics mode.  
Line 14: Draws box and saves it in A\$.  
Line 16: Saves A\$ for eight sprites and clears screen.

Lines 18-40: Draws filled box in all four corners of the screen connecting them with a rotated box.

Lines 42-56: Turns on colors, expands eight sprites.

Lines 58-64: Positions sprites in the corners of the screen.

Lines 66-72: Starts sprites moving at top speed.

Lines 76-82: Draws seven stripes in center of screen with A\$, changing colors with the DO-LOOP.

Before typing these programs, read "How to Enter Programs," and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

### C128 Spectacular

```
12 COLOR 0,1:COLOR 1,3:COLOR 4,1
:GRAPHIC 1,1'EYPF
14 BOX 1,0,0,23,21,,1:SSHAPE A$,0,0,
23,21'CCFH
16 FOR S=1 TO 8 STEP 1:SPRSV A$,S
:NEXT:SCNCLR'HMYK
18 GRAPHIC 1,1:BOX 1,0,0,48,42,,1'CSJK
20 FOR I= 0 TO 280 STEP 10'EHSB
22 BOX 1,I,0,I+40,40,I:NEXT'DPNF
24 COLOR 1,6:BOX 1,270,0,319,42,,
1'CVCH
26 FOR I= 0 TO 160 STEP 10'EHPH
28 BOX 1,280,I,310,I+40,I:NEXT'DSRL
30 COLOR 1,3:FOR I= 0 TO 160 STEP
10'FLLE
32 BOX 1,0,I,40,I+40,I:NEXT'DPNG
34 COLOR 1,8:BOX 1,0,158,48,199,,
1'CVVI
36 FOR I= 0 TO 280 STEP 10'EHSI
38 BOX 1,I,165,I+40,199,I:NEXT'DSJM
40 COLOR 1,7:BOX 1,270,158,319,199,,
1'CYSG
42 SPRITE 1,1,3,1,1,1,0'BOAF
44 SPRITE 2,1,6,1,1,1,0'BOEH
46 SPRITE 3,1,8,1,1,1,0'BOHJ
```

```
48 SPRITE 4,1,7,1,1,1,0'BOHL
50 SPRITE 5,1,3,1,1,1,0'BOEE
52 SPRITE 6,1,6,1,1,1,0'BOIG
54 SPRITE 7,1,8,1,1,1,0'BOLI
56 SPRITE 8,1,7,1,1,1,0'BOLK
58 MOVSPR 1,24,50:MOVSPR 2,296,60'CSNO
60 MOVSPR 3,24,230:MOVSPR 4,310,
210'CUWH
62 MOVSPR 5,24,50:MOVSPR 6,296,50'CSUJ
64 MOVSPR 7,24,208:MOVSPR 8,296,
208'CUFL
66 MOVSPR 1,90 #15:MOVSPR 6,
270 #15'CSVN
68 MOVSPR 2,180 #15:MOVSPR 8,
360 #15'CTVP
70 MOVSPR 7, 90 #15:MOVSPR 4,
270 #15'CSZI
72 MOVSPR 5,180 #15:MOVSPR 3,
360 #15'CTTK
74 DO'BAJH
76 C=3:FOR X=56 TO 236 STEP 30
:FOR Y=60 TO 123 STEP 21'JUVT
78 COLOR 1,C:GSHAPE A$,X,Y:NEXT:C=C+1
:NEXT'GQOS
80 C=5:FOR X=56 TO 236 STEP 30
:FOR Y=60 TO 123 STEP 21'JUXO
82 COLOR 1,C:GSHAPE A$,X,Y:NEXT:C=C+1
:NEXT'GQON
84 LOOP'BAKI
```

END



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## EditWedge for the Commodore 64

**E**ditWedge is a machine-language program that helps the Commodore 64 programmer in five ways. It searches through a program locating a variable or literal and displays the line number(s) containing it, resequences a program's line numbers, and simplifies toggling the key-repeat flag, changing screen background and border colors, and displaying available memory.

EditWedge can be used with the DOS wedge or by itself. If it is to be used with the DOS wedge, the DOS wedge must be loaded and activated before loading EditWedge. Also, when EditWedge is activated, the BASIC pi constant key cannot be used. This is because the pi key (shifted up-arrow) is used to divert control to the EditWedge program. If pi is needed in a program, set a variable like PI to the value of pi ( $PI = 3.14159265$ ) and use PI instead of the BASIC constant.

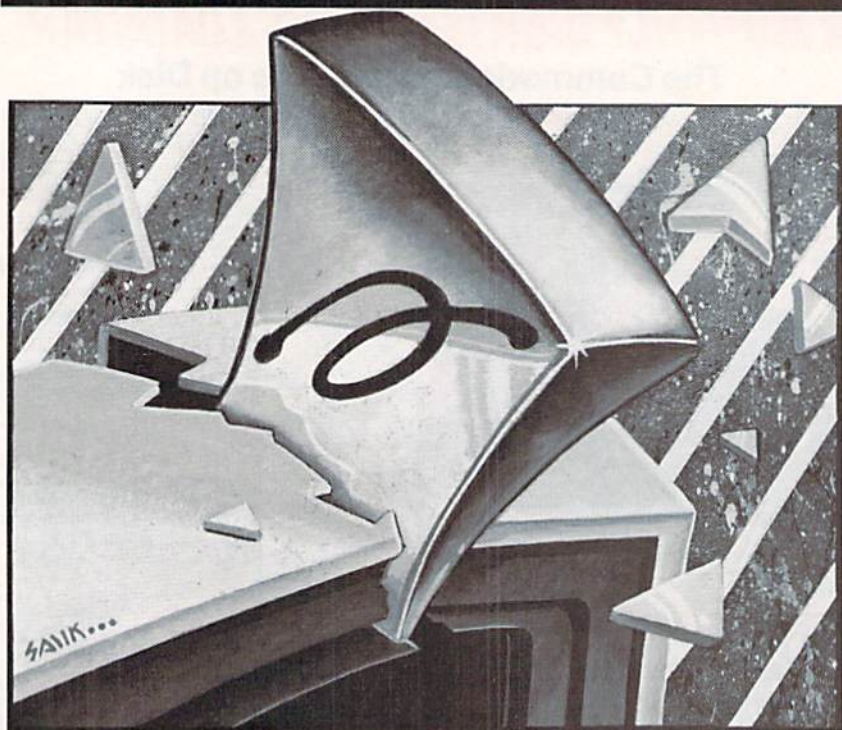
To divert control from the normal BASIC editor to EditWedge, hold down the shift key and press the up-arrow key. The pi symbol will be visible. Now press the RETURN key. The EditWedge menu will display these six selections.

- F1 = Search
- F2 = Line Numbers
- F3 = Repeat Toggle
- F4 = Colors
- F5 = Memory
- F6 = Delink Wedge

and wait for a function key to be pressed.

Pressing the F1 key displays the prompt "SEARCH FOR?" and waits for the character string search argument. The search string may be any literal, variable or comment used in the program. Pressing RETURN after entering the search argument starts the search. As the string is located, the line numbers of the lines containing the string are displayed.

Pressing the F2 key displays "ENTER 3



*Wedge some new features into the 64 editor.*

DIGIT BEGINNING NBR." Enter a number from 1 to 255 and press RETURN. After "ENTER 3 DIGIT INCREMENT" is displayed, enter a number from 1 to 255 and press RETURN. The line numbers are resequenced.

Pressing F3 sets and unsets the key-repeat flag. This could be done with a POKE command, but here it is accomplished by just pressing a key.

Pressing the F4 key displays "ENTER 2 DIGIT BORDER COLOR." Enter a number from 1 to 15 and press RETURN. After "ENTER 2 DIGIT BACKGROUND COLOR" is displayed, enter a number from 1 to 15 and press RETURN.

Pressing the F5 key automatically calculates the available RAM in the BASIC program area and displays it on the screen. This is similar to using the FRE command in a formula, but is accomplished here with one keystroke. The NEW command has no effect on the cal-

culatation. It always calculates the *most recent* program in memory.

Pressing the F6 key will delink EditWedge (and DOS if in use). The pi key may now be used to return the value of pi. To reinstate EditWedge (and DOS if in memory), just type SYS 49152 and press RETURN.

Note that after a function is performed, EditWedge will return control back to the editor. EditWedge remains transparent to normal operation until the Shift up-arrow/RETURN sequence calls it into use.

Key in the following BASIC Loader program for EditWedge. Each DATA statement is check-summed to avoid key punching errors. Run the program until there are no DATA statement errors. If you own one of the monitor programs, EditWedge can be saved from memory locations C000 to C504 to a loadable disk PGM file. SYS 49152 will activate the wedge if loaded in that manner. C

Before typing these programs, read "How to Enter Programs," and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

### EditWedge BASIC Loader

```
110 PRINT "[CLEAR] VERIFYING DATA
  STATEMENTS...":LN=1000'CHBH
120 FOR X=1 TO 111:CA=0:LN=LN+10'GQOE
```

```
130 FOR Y=1 TO 12:READ BYTE'EJJC
140 CA=CA+BYTE:NEXT Y'DKWD
150 READ CS:IF CA<>CS THEN PRINT"
  [DOWN]DATA STATEMENT ERROR AT
  LINE ";LN:END'HLOP
160 NEXT X'BBRB
```

*Continued on pg. 144*



(No I.D. required for half-elves.)

# When the Going Gets Tough, the Bard Goes Drinking.

And the going is tough in Skara Brae town. The evil wizard Mangar has cast an eternal winter spell. Monsters control the streets and dungeons beneath. Good citizens fear for their lives. What's worse, there's only one tavern left that serves wine. But the Bard knows no fear. With his trusty harp and a few rowdy minstrel songs he claims



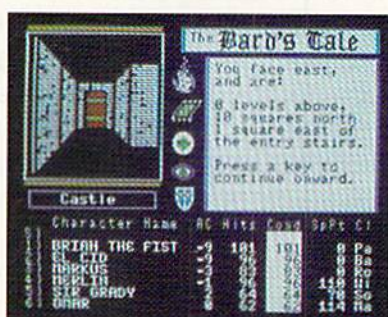
are magic, the Bard is ready to boogie. All he needs is a band of loyal followers: a light-fingered rogue to find secret doors, a couple of fighters to bash heads, a conjurer to create weird allies, a magician for magic armor. Then it's off to combat, as soon as the Bard finishes one more verse. Now what's a word that rhymes with "dead oger?"



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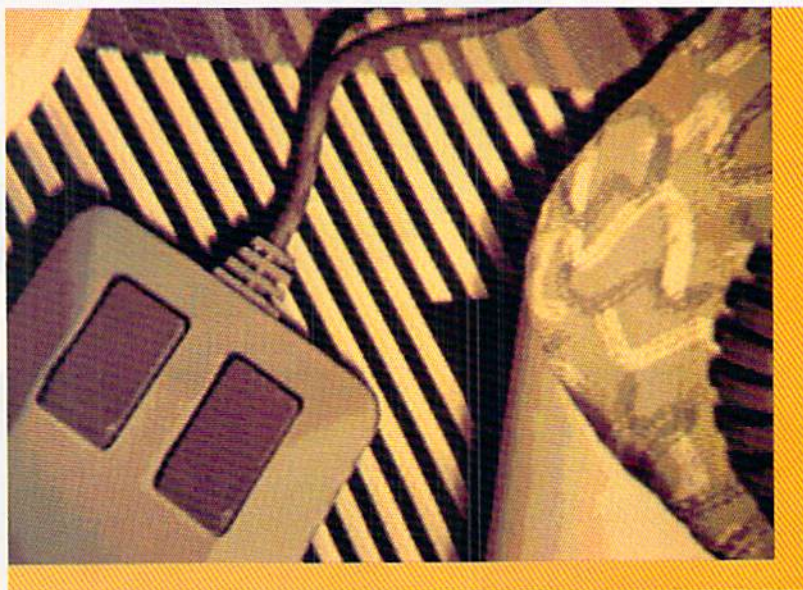


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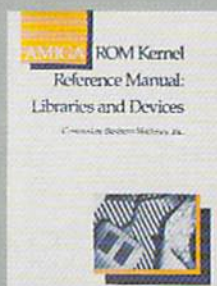
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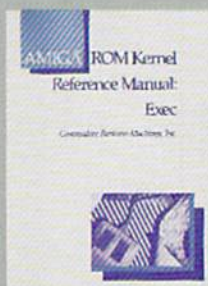
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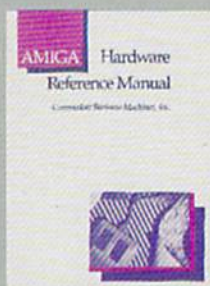
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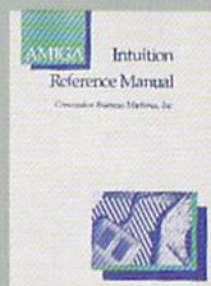
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# 64 USERS/EDITWEDGE

Continued from pg. 140

```

200 RESTORE:PRINT"[CLEAR]";
    :A=49152'DJUA
210 FOR X=1 TO 16:PRINT"[DOWN]";:NEXT
    :PRINT"[RIGHT26,BACK ARROW,HOME]";
    'GJVG
250 FOR X=1 TO 111'DFRD
260 FOR Y=1 TO 12:READ BYTE'EJGG
270 POKE A,BYTE:A=A+1'DKDH
280 IF T=1 THEN T=0:GOTO 290'FICI
285 PRINT"[CMDR +]";:T=1'CEKL
290 NEXT Y:READ CS'CEYH
300 NEXT X'BBRW
310 SYS 49152:END'CGRA
1010 DATA 32, 118, 192, 165, 125,
    201, 243, 208, 15, 169, 76, 141,
    1685'BYFE
1020 DATA 41, 192, 169, 243, 141, 42,
    192, 169, 204, 141, 43, 192,
    1769'BYLF
1030 DATA 169, 76, 133, 124, 169, 37,
    133, 125, 169, 192, 133, 126,
    1586'BAUG
1040 DATA 96, 201, 255, 240, 10, 201,
    58, 176, 3, 76, 128, 0,
    1444'BTDF
1050 DATA 76, 138, 0, 32, 118, 192,
    32, 159, 255, 32, 228, 255,
    1517'BVNH
1060 DATA 201, 0, 240, 246, 201, 133,
    208, 3, 76, 97, 193, 201,
    1799'BVBI
1070 DATA 137, 208, 3, 76, 226, 194,
    201, 134, 208, 3, 76, 232,
    1698'BVPJ
1080 DATA 195, 201, 138, 208, 3, 76,
    56, 196, 201, 135, 208, 3,
    1620'BVDK
1090 DATA 76, 210, 196, 201, 139,
    208, 207, 169, 201, 133, 124,
    169, 2033'BBTM
1100 DATA 58, 133, 125, 169, 176,
    133, 126, 76, 134, 227, 162, 0,
    1519'BXND
1110 DATA 189, 132, 192, 32, 210,
    255, 232, 224, 219, 208, 245,
    96, 2234'BACF
1120 DATA 13, 13, 32, 32, 32, 32, 69,
    68, 73, 84, 47, 87, 582'BOBE
1130 DATA 69, 68, 71, 69, 32, 40, 67,
    41, 32, 49, 57, 56, 651'BONF
1140 DATA 53, 32, 77, 73, 75, 69, 32,
    76, 69, 73, 68, 69, 766'BOLG
1150 DATA 76, 13, 13, 32, 32, 32, 32,
    32, 32, 32, 32, 83, 441'BOSG
1160 DATA 72, 73, 70, 84, 32, 94, 32,
    40, 82, 69, 84, 85, 817'BOMI
1170 DATA 82, 78, 41, 32, 84, 79, 32,
    69, 78, 84, 69, 82, 810'BOAJ
1180 DATA 13, 32, 32, 32, 32, 32, 32,
    32, 32, 70, 49, 32, 420'BOMJ
1190 DATA 32, 61, 32, 83, 69, 65, 82,
    67, 72, 13, 32, 32, 640'BORL
1200 DATA 32, 32, 32, 32, 32, 32, 70,
    50, 32, 32, 61, 32, 469'BOUC
1210 DATA 76, 73, 78, 69, 32, 78, 85,
    77, 66, 69, 82, 83, 868'BOBE
1220 DATA 13, 32, 32, 32, 32, 32, 32,
    32, 32, 70, 51, 32, 422'BOHE
1230 DATA 32, 61, 32, 82, 69, 80, 69,
    65, 84, 32, 84, 79, 769'BOYG
1240 DATA 71, 71, 76, 69, 13, 32, 32,
    32, 32, 32, 32, 32, 524'BOBH
1250 DATA 32, 70, 52, 32, 32, 61, 32,
    67, 79, 76, 79, 82, 694'BOJI
1260 DATA 83, 13, 32, 32, 32, 32, 32,
    32, 32, 32, 70, 53, 475'BOXI
1270 DATA 32, 32, 61, 32, 77, 69, 77,
    79, 82, 89, 13, 32, 675'BOQK
1280 DATA 32, 32, 32, 32, 32, 32, 32,
    70, 54, 32, 32, 61, 473'BOTK
1290 DATA 32, 68, 69, 76, 73, 78, 75,
    32, 87, 69, 68, 71, 798'BOVM
1300 DATA 69, 13, 13, 13, 13, 162, 0,
    142, 44, 194, 169, 8, 840'BQHE
1310 DATA 141, 45, 194, 142, 48, 194,
    189, 49, 194, 32, 210, 255,
    1693'BXDG
1320 DATA 232, 224, 13, 208, 245,
    162, 0, 32, 207, 255, 201, 13,
    1792'BWKH
1330 DATA 240, 7, 157, 62, 194, 232,
    76, 123, 193, 142, 47, 194,
    1667'BWXI
1340 DATA 169, 13, 32, 210, 255, 32,
    210, 255, 32, 35, 194, 201,
    1638'BWRJ
1350 DATA 0, 208, 3, 76, 134, 227,
    32, 35, 194, 162, 0, 32,
    1103'BRQJ
1360 DATA 35, 194, 141, 221, 194,
    141, 223, 194, 32, 35, 194, 141,
    1745'BYEL
1370 DATA 222, 194, 141, 224, 194,
    32, 35, 194, 201, 0, 208, 23,
    1668'BWXM
1380 DATA 32, 35, 194, 201, 0, 240,
    6, 32, 35, 194, 76, 161,
    1206'BSWM
1390 DATA 193, 32, 35, 194, 201, 0,
    208, 209, 76, 134, 227, 221,
    1730'BWVO
1400 DATA 62, 194, 240, 5, 162, 0,
    76, 181, 193, 232, 236, 47,
    1628'BUMG
1410 DATA 194, 208, 210, 238, 48,
    194, 173, 48, 194, 201, 2, 208,
    1918'BXTH
1420 DATA 10, 169, 13, 32, 210, 255,
    169, 0, 141, 48, 194, 169,
    1410'BVWI
1430 DATA 32, 32, 210, 255, 32, 210,
    255, 32, 210, 255, 32, 122,
    1677'BWFJ
1440 DATA 194, 169, 40, 32, 210, 255,

```

Continued on pg. 146



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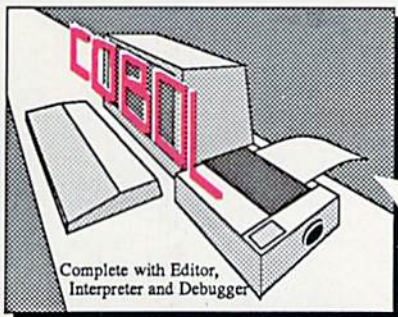


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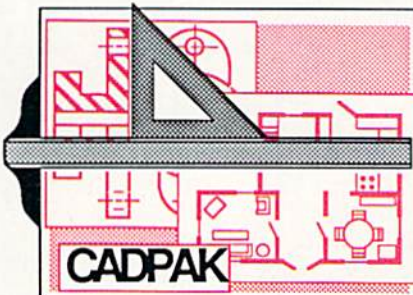
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# 64 USERS/EDITWEDGE

Continued from pg. 144

```

173, 44, 194, 141, 221, 194,
1867'BYJL
1450 DATA 173, 45, 194, 141, 222,
194, 32, 122, 194, 169, 41, 32,
1559'BXML
1460 DATA 210, 255, 162, 0, 76, 181,
193, 238, 44, 194, 208, 3,
1764'BVMM
1470 DATA 238, 45, 194, 173, 0, 8,
96, 0, 0, 13, 83, 69, 919'BNIL
1480 DATA 65, 82, 67, 72, 32, 70, 79,
82, 63, 32, 32, 32, 708'BOBN
1490 DATA 32, 32, 32, 32, 32, 32, 32,
32, 32, 32, 32, 32, 384'BOMN
1500 DATA 32, 32, 32, 32, 32, 32, 32,
32, 32, 32, 32, 32, 384'BOMF
1510 DATA 32, 32, 32, 32, 32, 32, 32,
32, 32, 32, 32, 32, 384'BOMG
1520 DATA 32, 32, 32, 32, 32, 32, 32,
32, 32, 32, 32, 32, 384'BOMH
1530 DATA 32, 32, 32, 32, 32, 32, 32,
32, 32, 32, 160, 0, 480'BOGI
1540 DATA 140, 225, 194, 162, 0, 173,
221, 194, 56, 249, 213, 194,
2021'BYXL
1550 DATA 141, 221, 194, 173, 222,
194, 200, 249, 213, 194, 144, 8,
2153'BASN
1560 DATA 141, 222, 194, 232, 136,
76, 129, 194, 136, 173, 221,
194, 2048'BBGO
1570 DATA 121, 213, 194, 141, 221,
194, 138, 208, 7, 44, 225, 194,
1900'BYYO
1580 DATA 48, 7, 16, 10, 162, 128,
142, 225, 194, 9, 48, 32,
1021'BSFO
1590 DATA 210, 255, 200, 200, 192, 8,
144, 191, 173, 221, 194, 9,
1997'BXGQ
1600 DATA 48, 32, 210, 255, 173, 223,
194, 141, 221, 194, 173, 224,
2088'BAXJ
1610 DATA 194, 141, 222, 194, 96, 16,
39, 232, 3, 100, 0, 10,
1247'BTVI
1620 DATA 0, 0, 0, 0, 0, 0, 169, 13,
32, 210, 255, 162, 841'BMDI
1630 DATA 0, 189, 127, 195, 32, 210,
255, 232, 224, 27, 208, 245,
1944'BXIL
1640 DATA 32, 179, 195, 144, 3, 76,
134, 227, 173, 231, 195, 141,
1730'BXMM
1650 DATA 125, 195, 162, 0, 189, 154,
195, 32, 210, 255, 232, 224,
1973'BYFO
1660 DATA 25, 208, 245, 32, 179, 195,
144, 3, 76, 134, 227, 173,
1641'BWQO
1670 DATA 231, 195, 141, 110, 195,
169, 0, 141, 126, 195, 169, 1,
1673'BXGP
1680 DATA 141, 67, 195, 169, 8, 141,
68, 195, 173, 67, 195, 201,
1620'BWDQ
1690 DATA 0, 208, 10, 173, 68, 195,
201, 0, 208, 3, 76, 134,
1276'BSCQ
1700 DATA 227, 162, 2, 173, 125, 195,
157, 1, 8, 173, 126, 195,
1544'BVNJ
1710 DATA 232, 224, 4, 208, 245, 173,
67, 195, 141, 94, 195, 173,
1951'BXWK
1720 DATA 68, 195, 141, 95, 195, 162,
0, 160, 1, 189, 1, 8, 1215'BRRK
1730 DATA 153, 66, 195, 200, 232,
224, 2, 208, 244, 24, 173, 125,
1846'BXBM
1740 DATA 195, 105, 0, 141, 125, 195,
173, 126, 195, 105, 0, 141,
1501'BXLN
1750 DATA 126, 195, 76, 44, 195, 0,
0, 69, 78, 84, 69, 82, 1018'BQON
1760 DATA 32, 51, 32, 68, 73, 71, 73,
84, 32, 66, 69, 71, 722'BOCO
1770 DATA 73, 78, 73, 78, 71, 32, 78,
66, 82, 32, 13, 69, 745'BOVP
1780 DATA 78, 84, 69, 82, 32, 51, 32,
68, 73, 71, 73, 84, 797'BOBQ
1790 DATA 32, 73, 78, 67, 82, 69, 77,
69, 78, 84, 32, 32, 773'BOHR
1800 DATA 197, 195, 141, 231, 195,
32, 197, 195, 32, 211, 195, 32,
1853'BYRL
1810 DATA 197, 195, 76, 211, 195, 32,
207, 255, 201, 48, 144, 249,
2010'BYHM
1820 DATA 201, 58, 176, 245, 41, 15,
96, 141, 230, 195, 173, 231,
1802'BXDM
1830 DATA 195, 10, 10, 109, 231, 195,
10, 109, 230, 195, 141, 231,
1666'BYPN
1840 DATA 195, 96, 0, 0, 173, 138, 2,
201, 128, 240, 21, 169,
1363'BTDN
1850 DATA 128, 141, 138, 2, 162, 0,
189, 25, 196, 32, 210, 255,
1478'BVHP
1860 DATA 232, 224, 15, 208, 245, 76,
22, 196, 169, 0, 141, 138,
1666'BWMQ
1870 DATA 2, 162, 0, 189, 40, 196,
32, 210, 255, 232, 224, 16,
1558'BUXR
1880 DATA 208, 245, 76, 134, 227, 13,
75, 69, 89, 32, 82, 69,
1319'BTKS
1890 DATA 80, 69, 65, 84, 32, 79, 78,
46, 13, 75, 69, 89, 779'BOTS
1900 DATA 32, 82, 69, 80, 69, 65, 84,
32, 79, 70, 70, 46, 778'BOYK
1910 DATA 162, 0, 189, 103, 196, 32,

```



# 64 USERS/EDITWEDGE

210, 255, 232, 224, 28, 208,  
1839'BXFM

1920 DATA 245, 32, 163, 196, 173,  
208, 196, 141, 32, 208, 162, 0,  
1756'BXKN

1930 DATA 189, 131, 196, 32, 210,  
255, 232, 224, 32, 208, 245, 32,  
1986'BYEP

1940 DATA 163, 196, 173, 208, 196,  
141, 33, 208, 76, 134, 227, 13,  
1768'BYSQ

1950 DATA 69, 78, 84, 69, 82, 32, 50,  
32, 68, 73, 71, 73, 781'BOVP

1960 DATA 84, 32, 66, 79, 82, 68, 69,  
82, 32, 67, 79, 76, 816'BOMQ

1970 DATA 79, 82, 32, 13, 69, 78, 84,  
69, 82, 32, 50, 32, 702'BOHR

1980 DATA 68, 73, 71, 73, 84, 32, 66,  
65, 67, 75, 71, 82, 827'BOXS

1990 DATA 79, 85, 78, 68, 32, 67, 79,  
76, 79, 82, 32, 32, 789'BOVT

2000 DATA 175, 196, 141, 208, 196,  
32, 175, 196, 76, 189, 196, 32,  
1812'BYIE

2010 DATA 207, 255, 201, 48, 144,  
249, 201, 58, 176, 245, 41, 15,  
1840'BXHE

2020 DATA 96, 141, 209, 196, 173,  
208, 196, 10, 10, 109, 208, 196,  
1752'BYNG

2030 DATA 10, 109, 209, 196, 141,  
208, 196, 96, 0, 0, 169, 0,  
1334'BTDG

2040 DATA 141, 44, 194, 169, 8, 141,  
45, 194, 32, 35, 194, 201,  
1398'BVSH

2050 DATA 0, 208, 249, 32, 35, 194,  
201, 0, 208, 242, 32, 35,  
1436'BTVM

2060 DATA 194, 201, 0, 208, 235, 56,  
169, 0, 237, 44, 194, 141,  
1679'BVNJ

2070 DATA 221, 194, 169, 160, 237,  
45, 194, 141, 222, 194, 162, 0,  
1939'BYJL

2080 DATA 189, 21, 197, 32, 210, 255,  
232, 224, 10, 208, 245, 32,  
1855'BXBL

2090 DATA 122, 194, 76, 134, 227, 13,  
77, 69, 77, 79, 82, 89,  
1239'BTVM

2100 DATA 32, 61, 32, 232, 208, 237,  
224, 7, 176, 6, 32, 210,  
1457'BTCD

2110 DATA 255, 232, 208, 246, 32,  
202, 194, 240, 186, 201, 32,  
240, 2268'BAOG

END

# BOOKS

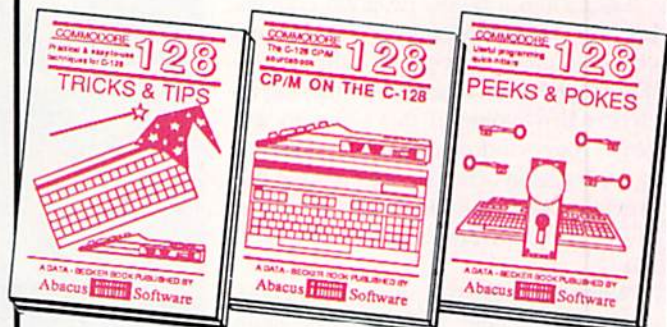
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## Windows on the Commodore 64

**Y**ou've read the ads in magazines, you've seen the commercials on TV. The message seems to be that a computer without windows is somehow not a real computer. If you are feeling bad because your Commodore 64 doesn't have windows, cheer up! Using this program, you too can have windows on your computer.

Windows on the Commodore 64 is a machine-language program for use within your BASIC programs to program windows on your Commodore 64 screen. Within your program, you can define any number of windows, but only one can be active at a time. After a window definition, all subsequent PRINT statements operate only in that window.

Listing 1 is a BASIC program containing the DATA statements for the machine-language program called Windows. Type it in. Remember, making an error when typing in this program will cause your window definition programs to malfunction. Also, be sure to save this program before running it the first time, as the program erases itself when you run it.

When you have the program functioning properly, here is how to program some windows. The Windows program adds three special functions to your PRINT statements: the F1, F2 and F3 keys. The F1 key sets the upper-left corner of the window, the F2 key sets the lower-right corner of the window, and the F3 key restores the window to full screen operation.

To use the F1 and F2 keys, first position the cursor using a PRINT statement to print the cursor control characters, then to print the appropriate function key character. The program in Listing 2 illustrates this. Here's a look at this program line by line.

**Line 100:** This PRINT statement clears the screen and positions the cursor five lines from the top of the screen and five columns from the left margin. Then F1 is printed. Printing F1 completes the definition of the upper-left corner of the window at the cursor's position: line 5, column 6.



*Now your Commodore 64 can have windows too.*

**Line 110:** This PRINT statement positions the cursor 6 lines down and 12 columns to the right. Remember, moving 12 columns to the right moves the cursor right from the right-hand side of the window as defined in line 100, not 12 columns right from the right-hand side of the screen. Then F2 is printed. This completes the definition of the lower-right corner of the window. The window has now been defined to begin at screen line 5 and continue across to screen line 12, and to begin at column 6 and continue

across to column 18.

**Line 120:** This PRINT statement homes the cursor and prints the test text included within the quotes. However, this cursor home operates only within the window. That is, the cursor is placed at line 5, column 6. Since the text is longer than the 12-character line length of the window, it wraps around and is printed on three lines like this.

THIS IS A TEST  
OF THE WINDOW'S  
PROGRAM!



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# 64 USERS ONLY/WINDOWS

**Line 130:** This line waits for you to press a key on the keyboard before continuing on to Line 140. Before pressing a key to continue, you can study the effect of the first three lines.

**Line 140:** This PRINT statement prints F3 which restores the normal screen and homes the cursor to its normal home position. You should always restore the normal screen before exiting a program or defining a new window. Exiting a program does not automatically restore the normal screen, so if you don't restore the screen to normal before exiting a program, the window will still be active when you load the new program. If you define a new window without restoring the screen to normal first, you will have a real problem on your hands. In this case what you would be doing is trying to define a new window within the old window.

One thing the Windows program does not do is check the validity of the window you have proposed. It is conceivable that you might attempt to set up a window where the top is below the bottom. If you do that, you'll never see anything printed in the window. It is up to you to be sure that your window is a valid window. A way to do this would be to define your window as it is in Listing 3, which is a modification of Listing 2.

By following the pattern in Listing 3, you'll never have any problems of invalid windows. One exception to this is having 40 or more cursor-right characters in your line which is equivalent to Line 100. Now look at Line 100 in Listing 3.



Note that it starts with F3. This, of course, restores the normal screen. The window defined is exactly like the window in Listing 2, except that it is defined in a single program line.

The program in Listing 4 illustrates another method of defining a window. Line 230 of this program defines the variable W\$(0), and line 240 defines another variable W\$(1). Look carefully. These variables are actually defining separate windows. When you print these variables, the windows are defined on the screen, as is done in Lines 250 and 340. Lines 260-340 contain the logic which prints the words TEST # XXX alternately in windows number 1 or number 2. Thus, the program appears to have two active

windows on the screen.

Please note: The INPUT routine does not function properly with the Windows program. Any text printed by the INPUT statement will be properly printed in the window, but the window routine does not stop the user input at the right edge of the window.

This routine works with machine-language programs using the kernel CHROUT (\$FDD2) routine to print to the screen. It prints within the window as long as location 157 (\$9D) contains a zero. This zero is a flag that differentiates between direct or immediate mode and program mode. If location 157 contains anything else, the routine disconnects itself, so that the normal screen print routines are in effect.

The program is stored at 39936 to 40959 (\$9C00 to \$9FFF). It uses zero page addresses 34 to 37 (\$22 to \$25) and 251 to 254 (\$FB to \$FE). These locations are used only when the routine to scroll the screen is called. You may use these locations for temporary storage or for permanent storage, if you never cause the screen to scroll up. Other storage is in the range 320 to 351 (\$0140 to \$015F).

The program works by simply changing the vector IBSOUT (\$0326) and processing the output before processing the kernel routine CHROUT. If the character to be printed should be processed for the window, then the program contains the appropriate routines. If not, the character is passed to the kernel routines to be printed on the screen.

Before typing these programs, read "How to Enter Programs," and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

## Listing 1 DATA Statements

```
100 PRINT "[CLEAR,DOWN2]";TAB(14);  
    "C-64 WINDOWS[DOWN2]"CFVB  
120 PRINT TAB(19);"BY[DOWN]"CEIY  
130 PRINT TAB(12);"RICHARD F.  
    DALEY"CEXE  
140 PRINT "[DOWN5]LOADING THE WINDOW  
    ROUTINE . . ."BAVI  
150 PO=39936: SY=PO: RESTORE'DNQF  
160 READ A: IF A=256 THEN 180'EJRF  
170 TL=TL+A: POKE PO,A: PO=PO+1  
    :GOTO 160'GUZL  
180 IF TL<>115372 THEN PRINT"THERE IS  
    AN ERROR IN THE DATA STATEMENTS"  
    :END'GJGT  
190 PRINT "[CLEAR,DOWN3]  
    WINDOWS ROUTINE SUCCESSFULLY
```

```
LOADED!"BAJP  
200 PRINT "[DOWN]TO SET THE UPPER  
    LEFT WINDOW, POSITION"BAQH  
210 PRINT "THE CURSOR AND PRINT AN F1  
    CHARACTER."BAMH  
220 PRINT "[DOWN]TO SET THE LOWER  
    RIGHT WINDOW, POSITION"BAWJ  
230 PRINT "THE CURSOR AND PRINT AN F2  
    CHARACTER."BANJ  
240 PRINT "[DOWN]TO RESTORE THE  
    NORMAL SCREEN, PRINT AN"BADL  
250 PRINT "F3 CHARACTER."BAXE  
260 PRINT "[DOWN]FOR MORE DETAILS SEE  
    THE ACCOMPANYING"BARM  
270 PRINT "ARTICLE."BAKE  
280 PRINT "[DOWN]PRESS THE RETURN KEY  
    TO INSTALL THE"BANO  
290 PRINT "WINDOW ROUTINE."BARJ  
300 PRINT "[DOWN2]SYS 39936[UP3]"  
    :NEW'CBEC  
1000 DATA 169, 147, 32, 210, 255, 120,  
    173, 38, 3, 141, 46, 3'BPDB
```



# 64 USERS ONLY/WINDOWS

```

1010 DATA 173, 39, 3, 141, 47, 3, 169,
      208, 141, 38, 3, 169'BNNB
1020 DATA 156, 141, 39, 3, 165, 209,
      141, 80, 1, 141, 64, 1'BNGC
1030 DATA 165, 210, 141, 81, 1, 141,
      65, 1, 165, 209, 24, 105'BPPE
1040 DATA 192, 141, 83, 1, 141, 66, 1,
      165, 210, 105, 3, 141'BOUE
1050 DATA 84, 1, 141, 67, 1, 165, 243,
      141, 86, 1, 141, 68'BMPE
1060 DATA 1, 165, 244, 141, 87, 1,
      141, 69, 1, 165, 243, 24'BNMG
1070 DATA 105, 192, 141, 88, 1, 141,
      70, 1, 165, 244, 105, 3'BOCH
1080 DATA 141, 89, 1, 141, 71, 1, 169,
      0, 141, 82, 1, 141'BLAI
1090 DATA 90, 1, 169, 24, 141, 91, 1,
      169, 39, 141, 85, 1'BLTJ
1100 DATA 88, 169, 0, 133, 55, 141,
      131, 2, 169, 156, 133, 56'BPQC
1110 DATA 141, 132, 2, 169, 156, 133,
      35, 169, 156, 133, 34, 160'BSID
1120 DATA 0, 177, 34, 240, 6, 32, 210,
      255, 200, 208, 246, 96'BPBE
1130 DATA 42, 42, 42, 32, 67, 45, 54,
      52, 32, 87, 73, 78'BKFE
1140 DATA 68, 79, 87, 83, 32, 42, 42,
      42, 13, 13, 40, 67'BKDF
1150 DATA 41, 32, 49, 57, 56, 52, 32,
      66, 89, 32, 82, 73'BKLG
1160 DATA 67, 72, 65, 82, 68, 32, 70,
      46, 32, 68, 65, 76'BKVH
1170 DATA 69, 89, 13, 0, 8, 141, 92,
      1, 142, 94, 1, 140'BJPI
1180 DATA 95, 1, 104, 141, 93, 1, 165,
      154, 201, 3, 240, 3'BMVJ
1190 DATA 76, 113, 157, 165, 157, 240,
      3, 76, 113, 157, 173, 92'BRWL
1200 DATA 1, 201, 13, 208, 3, 76, 136,
      157, 201, 17, 208, 3'BNYC
1210 DATA 76, 166, 157, 201, 19, 208,
      3, 76, 178, 157, 201, 133'BRVE
1220 DATA 208, 3, 76, 215, 157, 201,
      134, 208, 3, 76, 248, 157'BRFE
1230 DATA 201, 137, 208, 3, 76, 61,
      158, 201, 145, 208, 3, 76'BPIG
1240 DATA 94, 158, 201, 147, 208, 3,
      76, 136, 158, 164, 211, 204'BSPH
1250 DATA 82, 1, 176, 43, 32, 230,
      158, 32, 8, 159, 176, 33'BNWH
1260 DATA 173, 80, 1, 133, 209, 173,
      81, 1, 133, 210, 173, 82'BPXJ
1270 DATA 1, 133, 211, 173, 86, 1,
      133, 243, 173, 87, 1, 133'BOEJ
1280 DATA 244, 173, 90, 1, 133, 214,
      76, 113, 157, 164, 211, 204'BSYL
1290 DATA 85, 1, 144, 17, 240, 15, 32,
      183, 158, 32, 217, 158'BPLM
1300 DATA 144, 7, 240, 5, 198, 214,
      32, 23, 159, 32, 119, 157'BPOE
1310 DATA 108, 46, 3, 173, 93, 1, 72,
      173, 92, 1, 174, 94'BLAE
1320 DATA 1, 172, 95, 1, 40, 24, 88,
      96, 32, 150, 157, 169'BMCF
1330 DATA 0, 133, 199, 133, 212, 133,
      216, 76, 119, 157, 32, 183'BSKH
1340 DATA 158, 32, 217, 158, 144, 7,
      240, 5, 198, 214, 32, 23'BPNI
1350 DATA 159, 96, 165, 211, 72, 32,
      150, 157, 104, 133, 211, 76'BSKJ
1360 DATA 119, 157, 32, 184, 157, 76,
      139, 157, 173, 80, 1, 133'BRAK
1370 DATA 209, 173, 81, 1, 133, 210,
      173, 82, 1, 133, 211, 173'BQRL
1380 DATA 86, 1, 133, 243, 173, 87, 1,
      133, 244, 173, 90, 1'BNOL
1390 DATA 133, 214, 96, 165, 209, 141,
      80, 1, 165, 210, 141, 81'BRBN
1400 DATA 1, 165, 211, 141, 82, 1,
      165, 214, 141, 90, 1, 165'BOWE
1410 DATA 243, 141, 86, 1, 165, 244,
      141, 87, 1, 76, 119, 157'BPTG
1420 DATA 173, 64, 1, 141, 80, 1, 173,
      65, 1, 141, 81, 1'BKAG
1430 DATA 173, 66, 1, 141, 83, 1, 173,
      67, 1, 141, 84, 1'BKKH
1440 DATA 173, 68, 1, 141, 86, 1, 173,
      69, 1, 141, 87, 1'BKUI
1450 DATA 173, 70, 1, 141, 88, 1, 173,
      71, 1, 141, 89, 1'BKKJ
1460 DATA 169, 0, 141, 82, 1, 141, 90,
      1, 169, 24, 141, 91'BMHK
1470 DATA 1, 169, 39, 141, 85, 1, 76,
      178, 157, 165, 209, 141'BPDM
1480 DATA 83, 1, 165, 210, 141, 84, 1,
      165, 211, 141, 85, 1'BNAM
1490 DATA 165, 214, 141, 91, 1, 165,
      243, 141, 88, 1, 165, 244'BQIO
1500 DATA 141, 89, 1, 76, 119, 157,
      165, 211, 72, 32, 230, 158'BQOG
1510 DATA 32, 8, 159, 176, 25, 173,
      80, 1, 133, 209, 173, 81'BOSH
1520 DATA 1, 133, 210, 173, 86, 1,
      133, 243, 173, 87, 1, 133'BODH
1530 DATA 244, 173, 90, 1, 133, 214,
      104, 133, 211, 76, 119, 157'BSAJ
1540 DATA 32, 184, 157, 164, 211, 169,
      32, 145, 209, 200, 204, 85'BTCL
1550 DATA 1, 240, 248, 144, 246, 164,
      211, 173, 33, 208, 41, 15'BRYL
1560 DATA 145, 243, 200, 240, 251,
      144, 249, 32, 183, 158, 32,
      217'BUWN
1570 DATA 158, 144, 220, 240, 218, 32,
      184, 157, 76, 139, 157, 169'BUWO
1580 DATA 40, 24, 101, 209, 133, 209,
      169, 0, 101, 210, 133, 210'BSYO
1590 DATA 169, 40, 24, 101, 243, 133,
      243, 169, 0, 101, 244, 133'BSPP
1600 DATA 244, 173, 82, 1, 133, 211,
      230, 214, 96, 165, 210, 205'BSTH
1610 DATA 84, 1, 144, 5, 165, 209,
      205, 83, 1, 96, 165, 209'BNAH
1620 DATA 56, 233, 40, 133, 209, 165,
      210, 233, 0, 133, 210, 165'BSNJ
1630 DATA 243, 56, 233, 40, 133, 243,

```



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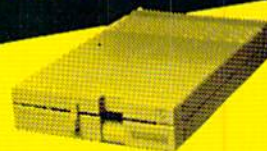
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# 64 USERS ONLY/WINDOWS

Continued from pg. 151

```

165, 244, 233, 0, 133, 244'BSWK
1640 DATA 173, 85, 1, 133, 211, 198,
      214, 96, 165, 210, 205, 81'BRLL
1650 DATA 1, 240, 2, 176, 5, 165, 209,
      205, 80, 1, 96, 173'BMNL
1660 DATA 80, 1, 133, 34, 24, 105, 40,
      133, 36, 173, 81, 1'BMVM
1670 DATA 133, 35, 105, 0, 133, 37,
      173, 86, 1, 133, 251, 24'BOBN
1680 DATA 105, 40, 133, 253, 173, 87,
      1, 133, 252, 105, 0, 133'BQOP
1690 DATA 254, 173, 90, 1, 133, 214,
      172, 82, 1, 177, 36, 145'BPJQ
1700 DATA 34, 177, 253, 145, 251, 200,
      204, 85, 1, 144, 242, 240'BSWI
1710 DATA 240, 165, 34, 24, 105, 40,
      133, 34, 165, 35, 105, 0'BPOJ
1720 DATA 133, 35, 165, 36, 24, 105,
      40, 133, 36, 165, 37, 105'BQCK
1730 DATA 0, 133, 37, 165, 251, 24,
      105, 40, 133, 251, 165, 252'BRSL
1740 DATA 105, 0, 133, 252, 165, 253,
      24, 105, 40, 133, 253, 165'BSQM
1750 DATA 254, 105, 0, 133, 254, 230,
      214, 165, 214, 205, 91, 1'BRNN
1760 DATA 176, 3, 76, 66, 159, 173,
      83, 1, 133, 209, 173, 84'BOGO
1770 DATA 1, 133, 210, 173, 88, 1,
      133, 243, 173, 89, 1, 133'BOCP
1780 DATA 244, 173, 91, 1, 133, 214,
      172, 82, 1, 132, 211, 169'BQYQ
1790 DATA 32, 145, 209, 200, 204, 85,
      1, 144, 248, 240, 246, 164'BSCR
1800 DATA 211, 173, 33, 208, 41, 15,
      145, 243, 200, 204, 85, 1'BQOJ
1810 DATA 144, 248, 240, 246, 173, 83,
      1, 133, 209, 173, 84, 1'BQMK
1820 DATA 133, 210, 173, 88, 1, 133,
      243, 173, 89, 1, 133, 244'BQGL
1830 DATA 173, 91, 1, 133, 214, 96,
      256'BXAI

```

END

## Listing 2 Windows ML Program

```

100 PRINT "[CLEAR,DOWN5,RIGHT5,F1]
      '"BACW
110 PRINT "[DOWN6,RIGHT12,F2]'"BADX
120 PRINT "[HOME]THIS IS A TEST OF
      THE WINDOWS PROGRAM!"'BAQH
130 GET A$: IF A$="" THEN 130'EIDC
140 PRINT "[F3]": END'CBRA

```

END

## Listing 3 Windows Modification

```

100 PRINT "[F3,CLEAR,DOWN5,RIGHT5,F1,
      DOWN7,RIGHT12,F2]'"BAYA
120 PRINT "[HOME]THIS IS A TEST OF
      THE WINDOWS PROGRAM!"'BAQH
130 GET A$: IF A$="" THEN 130'EIDC
140 PRINT "[F3]": END'CBRA

```

END

## Listing 4 Windows Modification

```

100 PRINT "[CLEAR]": CS="[BLACK,WHITE,
      RED,CYAN,PURPLE,GREEN,YELLOW,
      ORANGE,BROWN,L. RED,GRAY1,GRAY2,
      L. GREEN,L. BLUE,GRAY3]": C=1
      : BL$="[SPACE10]"'EKBK
110 PRINT "[BLACK,HOMEDOWN3,RIGHT2]
      *****"BAHA
120 FOR I=0 TO 5: PRINT TAB(2);"*";
      TAB(18);"*": NEXT I'HOAE
130 PRINT "[RIGHT2]*****"
      'BAXB
140 PRINT "[HOME,DOWN18]"BAVA
150 PRINT "[DOWN]NOTICE THAT THE
      INFORMATION IN THE"BAJX
160 PRINT "WINDOWS ABOVE WILL SCROLL
      UP EACH TIME"BAKL
170 PRINT "THAT YOU PRESS THE SPACE
      BAR."BAQK
180 PRINT "[DOWN]PRESS THE ASTERISK
      (*) TO END THE DEMO.[HOME]"BAKN
190 PRINT "[DOWN11,CYAN]
      THIS IS A TEST": PRINT "OF THE
      PROGRAM[DOWN]"CBNO
200 PRINT TAB(4);"[RVS]WINDOWS[RVOFF]"
      : PRINT TAB(7);"BY"
      : PRINT "RICHARD F. DALEY[HOME]"
      'FIII
210 PRINT TAB(20);"[YELLOW,DOWN3,
      SHFT N]A WINDOW CAN HAVE A"CEEF
215 PRINT TAB(20);"[SHFT M]
      BORDER LIKE THIS."CEDJ
220 PRINT TAB(20);"[GREEN,DOWN3]
      OR NO BORDER AT ALL."
      : PRINT TAB(27);"[SHFT M,SHFT N]"
      'EJPI
230 WS(0)="[F3,HOMEDOWN4,RIGHT3,F1,
      RIGHT14,DOWN5,F2,HOM]"
      : RS(0)=""'CLLG
240 WS(1)="[F3,HOMEDOWN13,RIGHT20,F1,
      RIGHT14,DOWN5,F2,HOM]"'BFTI
245 RS(1)="[RVS]"'BFMG
250 PRINT WS(0);'BGHC
260 PRINT "[DOWN5]";MID$(CS,C,1);
      "TEST #11;[LEFT]";LEFT$(BL$,
      6+(11>9)+(11>100))'HILQ
270 IF 11<10 THEN 310'DHIG
280 IF CT=0 THEN 310'DGMH
290 GET A$: IF A$="" THEN 290'EIKJ
300 IF A$="" THEN 350'DFMA
310 C1=C1+1: IF C1=6 THEN C=C+1
      : C1=0'IQXG
320 IF C=15 THEN C=1'EFDG
330 11=11+1: CT=INT(11/2)
      : CT=11-2*CT'IVCK
340 PRINT WS(CT);RS(CT);
      : GOTO 260'CSRG
350 PRINT "[WHITE,F3]NORMAL SCREEN IS
      RESTORED[L. BLUE]": END'CBYL

```

END



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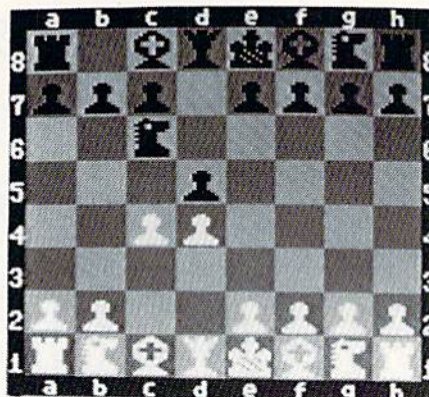
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## Game Design, Part 5

### A New Character Set

On some TV sets it becomes very difficult to read the Commodore 64's characters. This is because either the TV set has a poor picture tube or there is some external interference causing the letters to blur. Program 1 is a BASIC loader that creates a machine-language routine to ameliorate the problem. It first relocates the entire ROM character set to RAM starting at 12288 and then fattens the letters up by shifting their values right one bit and then overlaying them (so to speak) over the original letter representation. This makes all the letters fatter and, therefore, more readable.

These fat letters can be used in your games, but more importantly, the routine that transfers them and then makes them fatter can be used to create your own character designs. To do this, type in Program 2, which is another BASIC loader that lets you create your own character designs using machine language. This



*If you follow the directions found within the program, you can easily create a machine-language character routine for each of your games.*

program was designed to create a loadable machine-code file that you can use to modify machine-code programs on your diskette. If you follow the directions found within the program, you can easily create a machine-language character routine for each of your games. This will save you time and will also help you see that machine code is not as static as some people might have you believe. It is also moldable like BASIC.

To create these personalized machine-code routines, you will have to tell Program 2 how many characters you will be modifying and the name of the new file. The program can modify up to 32 characters, and will automatically add .OBJ to the end of your file name so that you don't forget what kind of file it is. Do not attempt to modify more than 32 characters, because the machine-language program will not work properly.

The data for your custom characters has to be added to the end of Program 2. You can erase the data for the block smiley face by just typing in different data or you can leave it in and add data after it. Either way, you'll soon realize how much fun and how useful and fast Program 2 can be.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

#### Program 1. ML Custom Characters Loader

```
100 FOR X= 32768 TO 32853: READ A'ENNA
110 POKE X,A: NEXT X: SYS 32768'DLGA
120 DATA 173,14,220,41,254,141,14,
    220'BDRC
130 DATA 169,51,133,1,162,47,160,0,
    132'BESE
140 DATA 251,134,252,162,208,160,0,
    132'BEQF
150 DATA 253,134,254,230,252,177,
    253'BCPF
160 DATA 145,251,200,208,249,232,
    224'BCHG
170 DATA 217,208,240,169,55,133,1,
    173'BDMH
180 DATA 14,220,9,1,141,14,220,173,
    24'BDNI
190 DATA 208,41,240,9,12,141,24,
    208'BBAJ
200 DATA 162,48,160,0,134,252,177,
    251'BDJB
210 DATA 74,17,251,145,251,200,208,
    246'BECD
220 DATA 232,224,57,208,239,96'BVKC
```

END

#### Program 2. ML Custom Creator Loader

```
100 PRINT CHR$(147),CHR$(5)
    :POKE 53280,6:POKE 53281,0'FARD
110 PRINT "IF YOU HAVE NOT ENTERED
    YOUR NEW "'BAPE
120 PRINT "CHARACTER DATA AFTER THE
    REM"'BAPE
130 PRINT "STATEMENTS IN THIS PROGRAM
    YOU"'BAFH
140 PRINT "SHOULD STOP NOW AND DO IT
    FIRST."'BACI
150 PRINT "OTHERWISE HIT A KEY TO
    CONTINUE."'BAHJ
160 GET D$:IF D$="" THEN 160'EIMF
170 PRINT CHR$(147)'CFBE
180 PRINT "THIS PROGRAM WILL CREATE A
    PROGRAM FILE"'BAVO
190 PRINT "ON YOUR DISKETTE THAT CAN
    BE LOADED"'BAQN
200 PRINT "WITH A COMMA 8, COMMA 1 (,
    8,1) AND"'BAAE
210 PRINT "BE EXECUTED WITH A SYS
    32768. THIS"'BAMG
220 PRINT "PROGRAM IS USEFUL BECAUSE
    IT ALLOWS YOU"'BABJ
230 PRINT "TO MODIFY ML AND THEN SEND
```

Continued on pg. 160



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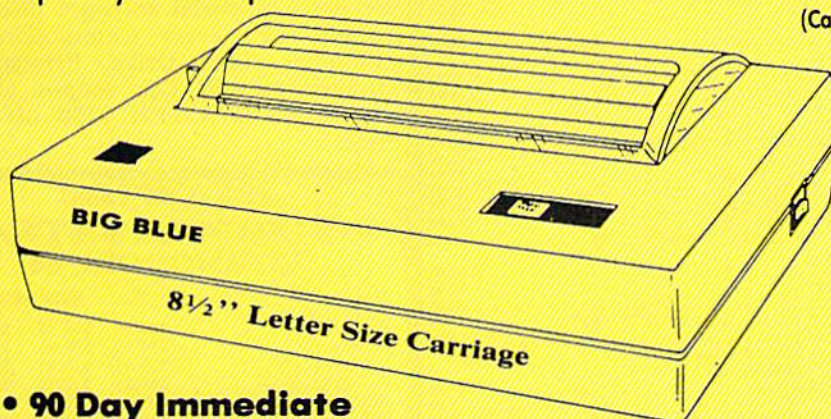
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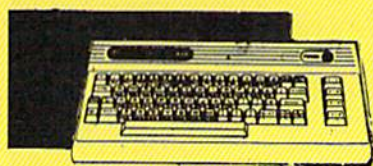
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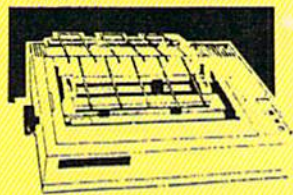
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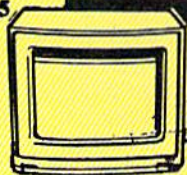
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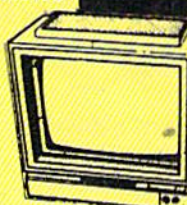
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```

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260 PRINT "THIS PROGRAM AND THEN TELL
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270 PRINT "HOW MANY CHARACTERS YOU
ARE MODIFYING."BAGO
280 PRINT "THE ML PRODUCED WILL
CHANGE THE"BAAM
290 PRINT "@ SYMBOL AND THE LETTERS
FOLLOWING IT"BADP
300 PRINT "(A,B,ETC...) ON UP UNTIL
ALL THE DATA"BAVG
310 PRINT "THAT YOU SUPPLIED HAS BEEN
PUT INTO"BAAI
320 PRINT "MEMORY."BAQB
330 INPUT "NAME OF FILE TO BE
CREATED";A$;BDJH
340 PRINT "EIGHT NUMBERS AFTER A DATA
STATEMENT"BACL
350 PRINT "MAKE UP ONE CHARACTER"BAKI
360 INPUT "NUMBER OF CHARACTERS";
C'BCVJ
370 A$=LEFT$(A$,12):OPEN 2,8,2,
A$+".OBJ,P,W"ESJM
380 PRINT#2,CHR$(0);:PRINT#2,
CHR$(128);'EPAK

```

```


390 FOR X= 1 TO 78+C*8:READ A'GILL
400 IF A<0 THEN A=C*8-1'GGAD
410 PRINT#2,CHR$(A);:NEXT X
:CLOSE 2'EKTD
420 DATA 173,14,220,41,254,141,14,
220'BDRF
430 DATA 169,51,133,1,162,47,160,0,
132'BESH
440 DATA 251,134,252,162,208,160,0,
132'BEQI
450 DATA 253,134,254,230,252,177,
253'BCPI
460 DATA 145,251,200,208,249,232,
224'BCHJ
470 DATA 217,208,240,169,55,133,1,
173'BDMK
480 DATA 14,220,9,1,141,14,220,173,
24'BDNL
490 DATA 208,41,240,9,12,141,24,
208'BBAM
500 DATA 162,0,189,78,128,157,0,
48'BAAE
510 DATA 232,224,-7,208,245,96'BVYE
520 REM'BARB
530 REM CHARACTER DATA FOLLOWS'BUQI
540 REM'BARD
550 DATA 255,153,153,255'BPMH
560 DATA 221,195,255,255'BPOI

```

END


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
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## Let's C Now, Part 2

*Get to know the C programming language in this series by expert programmer Paul Higginbottom. Part 1 appeared in the September/October Commodore Microcomputers.*

In the BASIC language built into computers like the Commodore 64, variables are created in memory as soon as they are used. That is, if we say  $A = 2$ , the interpreter finds some memory to remember that A from that point forward is equal to 2. Before that point, no memory was reserved for A.

In most compiled languages, you must define every variable that you are going to use before you use it. This might sound very tedious if you are used to BASIC interpreters, but it also has the advantage that you can't mistype a variable name, because the compiler will say that it doesn't understand your program. Have you ever done the following in a BASIC program?

```
100 AO = 5
110 IFAO = 5 GOTO 200
```

Note that in line 110, the variable is AO and not A0. The interpreter won't care, but the compiler will. Therefore, in the BASIC example, the test on line 110 will never be true, but you may never find out why your program doesn't get to line 200!

In BASIC, there are some implied variable types. Those without a suffix are assumed to be floating point numbers. Like A, Z or X2. Those with a suffix of a dollar-sign are known by the interpreter to mean a character string, and so on. In C, and most other compiled languages, you must specify the type of a variable explicitly before using it. For example, let's suppose you wanted a floating point number to represent a monetary total.



*As in BASIC, array elements start at 0, but unlike BASIC, the declaration does not specify the maximum subscript, but rather the number of elements.*

You would declare this as follows.

```
float total;
:
variable :
type variable
name
```

Note the semi-colon at the end of the declaration. You need one of these after almost all statements in C! This might seem like a real pain, but there is a reason. In the 64 and 128 screen interpreters, the end of input is defined as when you press the RETURN key. In a C program, it is usually where the semi-colon appears instead. So an equally valid declaration would have been

```
float
total;
```

Note also that the variable name is five characters long in this case. In versions of BASIC like that in the 64, variable names

are limited to two characters. Most C compilers support names up to 31 characters long.

You can declare multiple variables of the same type by separating them with commas. For example,

```
float fred, joe, tom;
```

Note that at the end of all the declarations is a semi-colon. The comma tells the compiler "Hey, there are more declarations of this type left to come!"

This is where putting them on separate lines is sometimes more legible. For example,

```
float
fred, /* fred's take home pay */
joe, /* joe's alimony payment */
tom; /* tom's winnings at poker */
```

I sneaked in another piece of syntax here: comments. Comments are enclosed between /\* and \*/.



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## A QUICK CONCLUSION.

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Continued from pg. 162

Since the ending of a line does not specify the end of a statement or piece of a program, it also does not end a comment. Therefore, a block of lines of text enclosed in /\* and \*/ often appears before a function in a program. For example,

```
/*
The following function poorslob(x)
computes the average disposable income
of programmers. It is only to be
used for statistical purposes and no
claims are being made about its validity.
*/
```

The above layout of a comment might precede a whole function, giving the reader an insight to its purpose.

One last thing about declaring variables: They can be given an initial value when declared. For example,

```
int a = 5, b = 3; /* declare variables
and initialize them */
```

## Variable Types

Now let us look at the commonly used variable types in C. The int type can hold a signed integer (positive and negative whole numbers) quantity. Its range depends on the type of computer. It is usually tied to the size of a microprocessor's word length (16-bit on a PDP-11, 32-bit on a VAX).

Three prefixes can be applied to the int type. They are

```
short int
long int
unsigned int
```

These prefixes may improve the efficiency of the code generated by the compiler, or they may be ignored. Generally, int's and short int's are synonymous, and are often 16 or 32 bits in size. A long int is usually the longest integer precision a machine can manipulate, usually 32 bits. I believe that the 64 C compiler from Pro-Line treats all three types as synonymous, as 16-bit quantities. The int can be dropped when using one of these three types of ints:

```
short stop;
long haul;
unsigned check;
```

The "unsigned" type means that all of the bits are thought of as specifying a positive magnitude. Thus, if an int is 16 bits, it can represent values from -32768 to 32767. An unsigned int can represent the same range of values, but only in the positive domain, i.e., 0 to 65535.

These variable types are the workhorses of C. They're used for looping var-

*The auto-increment/decrement operator is so closely tied to assembly-language instructions that their use helps the compiler generate fast code.*

iables, flags, counts, whole number quantities, and many other things. The use of one type over another is dependent upon the range of values the variable is likely to have. Since the short and int are often synonymous, the short type is usually only used to make a more obvious distinction between it and a long. (Short, and long, get it?).

The char type is what you would expect—a character, usually one byte or eight bits in size, but signed, so it can hold a value from -128 to +127. The unsigned prefix can be applied to this type also.

Here's a test: Of the types mentioned so far, which can hold the largest integer? Answer: unsigned long.

The float and double variable types hold floating point quantities. That is, they can have both integer and decimal parts. Their range and number of digits of precision are usually machine and/or compiler dependent, but doubles usually have twice the number of digits of precision that floats do.

An array of any of the above types can be declared by also declaring the number of elements in the array within square brackets. For example,

```
int num[10]; /* declare an array of 10
integer numbers */
```

As in BASIC, array elements start at 0, but unlike BASIC, the declaration does not specify the maximum subscript, but rather the *number of elements*. This distinction means that the above example declares an array of ten integers, which subscripts 0 thru 9. In BASIC, such a declaration (DIM NUM%(10)) declares eleven elements, 0 thru 10.

A last note on types: These are the basic types. There are more, but we're not ready to get to them yet.

## Operators

The C language provides a rich and powerful set of operators. Here are the obvious ones.

```
+ add
- subtract (or unary minus)
* multiply
/ divide (if not floats or doubles, remainder gets thrown away)
```

In addition, C provides the modulus operator (%). For those unfamiliar with this operator, it is the equivalent of getting the remainder from a division. The remainder when dividing 10 by 3 is 1. In BASIC this must be written as

```
A = 10
B = A-INT(A/3)*3:REM CRYPTIC IN-
DEED!
```

In C this becomes

```
int a, b;
a = 10;
b = a % 3;
```

The auto-increment/decrement(++ and --) are used extensively in C programming, and are so closely tied to assembly-language instructions that their use helps the compiler generate fast code. These two operators will increment (add one to) or decrement (subtract one from) any variable before or after its use.

The last part of that sentence, before or after its use, is important, because it means that a variable can be used in an expression, and be incremented or decremented before or after its value is used in evaluating the expression. For example,

```
int a = 1, b;
b = ++a; /* a is incremented to two,
and...b is assigned with that value (2)
*/
b = a++; /* b is assigned with a's value
(1), and...a is incremented to two
*/
```

Later in this series, we will see how these operators are used more productively, especially in conjunction with arrays.

The logical operators include &, ^, ~, << and >>. The first four are equivalents of BASIC's AND, OR, XOR and NOT operators. The last two are for shifting, bitwise, a value by a specified number of bits. These are the equivalent of the logical shift instructions in machine language. For example,

```
int a = 1234;
int b;
b = a << 2; /* compute a shifted left
by 2 bits */
```



# COMPUTER TUTOR

```
b = a >> 3; /* compute a divided by
8 (2 to the power 3) */
```

I doubt if you've ever questioned the philosophical nature of a BASIC statement such as `1020 I = I + 1`. You naturally think of this as "The new value of I is equal to the old value of I plus 1." However, mathematically it looks like an algebraic absurdity, for I cannot be equal to I+1! That could only be true if I were infinity.

Besides the philosophical problem, it's also somewhat clumsy the way one must repeat the variable being modified. C allows the type of assignment given above, but additionally, you can use assignment operators such as

```
i += 1; /* add 1 to i. */
or
i *= 6; /* multiply i by 6. */
instead of
i = i * 6;
```

As you can see, assignment operators are formed by taking any of the aforementioned operators, and appending an equals sign (with no spaces).

Note that the right-hand side of such an assignment should be thought of as

being inside parentheses.

```
i * = j + 1;
is not the same as
i = i * j + 1;
it is the same as
i = i * (j + 1);
```

You might say that assignment operators seem like a minor convenience, but consider the following statement in BASIC:

```
1000 X(Y/2+Z*3+1)=
X(Y/2+Z*3+1) + 1
```

Do you see the bug? The 1 on one side is a 1 on the other. Using an assignment operator avoids the kind of type

```
x[y/2+z*3+i] += 1;
or simply
++x[y/2+z*3+i];
```

From what you have read in Part 1 and Part 2 of this series, you should be able to write small programs with a single function `main()` that have variables, expressions, simple FOR loops and output via the `printf()` function.

As an exercise, fill in the skeleton program that follows to compute the smallest number in a ten-element array. To achieve this, you'll need one more piece

of information than has been covered here, and that is how to do a test. One type of test in C (which you will be familiar with) is the if statement. Its simplest format is

```
if (condition) {
    /* execute whatever is in this block */
}
```

where condition can be any expression or inequality such as

```
(expression > expression)
```

We'll look at this program and others, as well as loops and tests in detail next time.

## The skeleton

```
main()
{
    int nums[10];
    (declare whatever variables you need
    here)

    (here the nums array gets filled with values - you needn't worry about this)

    (here is where your code goes to identify
    and print the smallest value)
}
```

C

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## Klondike Solitaire for the Commodore 64

Solitaire's real name is Klondike, and it was invented in the late 1800's by gold miners in the Northwest Territories. If you think you have time on your hands, think of those miners! After all, the nights up there are six months long, and the temperatures seldom go above zero. After you've put out the cat and watched the Carson show, those mining towns were probably pretty slow. Klondike was invented to help pass the time. From there, it quickly spread across the United States and overseas.

Personally, I love the game, except for one minor thing—the cards. When I play, I like to have the cards all nice and neat, a condition which is practically impossible to maintain. After the game has progressed to the point when most of the cards are in play, my neat pile quickly degenerates into a mess. That's where this program comes in.

Klondike Solitaire faithfully simulates the classic game of Solitaire. The only difference between the two, in fact, is that it is impossible to cheat at this one! The advantage of this Solitaire is that the computer does all the dirty work: drawing the cards, moving piles of cards, and organizing the playing field. This leaves you free to enjoy the game.

### Solitaire

If you've never played Solitaire, the game is very simple. It uses a standard deck of 52 cards, and the cards are dealt into seven parallel rows. The first row has one card, the second two, on up to the seventh row, which has seven cards. The top card in each row is turned face up, and all cards under a face-up card are left face down. The seven rows will take up 28 of the cards, leaving 24 remaining in the deck.

Three cards are drawn off the top of the deck and flipped over onto what is called the bone pile. The top card on the bone pile is face up, and the rest are buried under it. Space is set aside for four piles of cards, one for each suit.

There are three things a player can do

here. First, he can move any face up card in any of the seven rows or on top of the bone pile from its current position to the top of either one of the rows or on top of the pile for the suit of that card. In general, a card being moved into one of the seven rows can only be put on top of a card which is numerically one above it and of a different color. For example, an eight of spades can be moved onto a nine of hearts, but not a nine of clubs. Or a jack of diamonds can only be moved on top of a black queen, such as the queen of spades. When a card is moved off a face-down card, the face-down card is flipped over, making it available for play. A card moved off the bone pile reveals the card underneath.

After cards are moved, a row may occasionally become empty. Kings are the only cards that can be moved into such empty rows, after which queens can be played onto the kings, and so on. You can move a row of cards or part of a row, provided that the top card in the section of the row being moved can be legally placed on top of the card at the bottom of the row it is being moved on top of. Aces are never moved into the seven

rows. When an ace is revealed, it should be moved into the empty pile for its suit. Once a suit pile is started with an ace, cards can be moved onto it, in order within the suit. For example, once the ace of spades is revealed and moved into the spades suit pile, the two of spades can follow it, followed by the three, and so on. The game is won when all of the cards are in order by suit.

Accomplishing this, though, is no easy task. The problem is that many cards are left buried under other cards, making it impossible to use them until they are revealed. Because of this, sometimes no legal moves exist. When this happens, you can draw, which flips three more cards off of the deck and onto the bone pile, giving you a new card to play.

As you draw new cards to work with, you will eventually use up all of the cards in the deck, after which the bone pile is turned over, in effect becoming a new deck to draw from. Because the cards are drawn in groups of three, if you go through the entire deck without revealing a card which is playable, you often encounter the same unplayable cards the second time around, still being unable to





## GAME PROGRAMS

get at the cards which were not revealed the last time through. When you can neither play a card off of the top of the bone pile or reveal face-down cards in the seven rows by moving face-up cards off them, you lose. When this happens, you quit and start over.

### Klondike Solitaire

Klondike Solitaire shuffles and deals the cards. The screen shows the current status of the cards, with the familiar seven rows of cards across the center of the screen. The area above the seven rows is reserved for cards that have been moved from the seven rows to their respective suit piles. The bone pile, which is where drawn cards go, is to the right of the four suits.

Playing is simple. Every move of a card or pile of cards involves two keystrokes on your computer's keyboard, one for the card to be moved and one for where you want to move it. There are eight possible sources, which are the bone pile, represented by the letter B, and the seven rows, which are represented by the numbers one through seven. There are 11 places a card can be moved: four suit piles (spades, hearts, diamonds, and clubs), each represented by the first letter in their names, and the seven rows, also represented by their first letters.

There will be times when it is impossible to move a card. When this happens, you can draw by pressing the letter D, which moves three cards from the deck to the bone pile. If you draw all the way through the deck, the program will flip the deck over and start you back through it. Whenever you type an illegal move, the program will stop to inform you. This prevents you from inadvertently messing up the game in any way.

One last thing—once Klondike Solitaire has progressed to the point where most cards are in play, some of the piles of cards can get very long. Due to screen limitations, the program cannot display all of the cards in rows. The program compromises by displaying a maximum of five face-up cards in a row at any given time. So don't worry if cards disappear in the middle of a pile, they are still there. They can be moved at any time and will reappear when the pile shrinks down again.

That's all there is to this unique game of skill and luck. Playing Klondike Solitaire is easy; beating it is another matter.

Program on next page

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# GAME PROGRAMS/KLONDIKE SOLITAIRE

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

## Klondike Solitaire

```
0 POKE 53280,12:POKE 53281,12'CRNC
2 PRINT"[CLEAR,BLACK,DOWN3]
  "SPC(12)"KLONDIKE SOLITAIRE[DOWN2]
  "'CDOI
3 PRINT SPC(11)"SHUFFLING THE
  DECK..."CDSI
5 POKE 56334,PEEK(56334)AND 254
  :POKE 1,PEEK(1)AND 251:B=12288'HHWO
6 C=53248:FOR I=0 TO 2047
  :POKE I+B,PEEK(I+C):NEXT
  :POKE 1,PEEK(1)OR 4'MEWR
7 POKE 56334,PEEK(56334)OR 1'DORJ
14 POKE 53272,(PEEK(53272)AND
  240)+12'EUBH
20 DIM C$(52),D(7,25),P(7),NU(7),
  U(52),B(27),DK(27),CK(52,2)'BDXJ
22 DATA A,2,3,4,5,6,7,8,9,@,J,Q,"K"
  :B$="[SPACE4,DOWN,LEFT4,SPACE4,
  DOWN,LEFT4,SPACE4,DOWN,LEFT4]"'CCUQ
24 N$="[RIGHT5]":Q$(1)="[BLACK]
  [SHFT A]":Q$(2)="[RED] [SHFT S]"
  :Q$(3)="[RED] [SHFT Z]"
  :Q$(4)="[BLACK] [SHFT X]"'FBGQ
```

```
25 FOR I=1 TO 12:FOR J=1 TO 2
  :CK(I,J)=14*J+I+(J=2):NEXT
  :NEXT'NBJQ
26 FOR I=14 TO 25:FOR J=0 TO 1
  :CK(I,J+1)=39*J+I-12:NEXT:NEXT'NBGR
27 FOR I=27 TO 38:FOR J=0 TO 1
  :CK(I,J+1)=39*J+I-25:NEXT:NEXT
  :CK(0,0)=-1'PKNW
28 CK(0,1)=-1:FOR I=40 TO 51
  :FOR J=1 TO 2:CK(I,J)=14*J+I+(J=2)
  -39:NEXT:NEXT'QNHV
30 FOR I=1 TO 4:RESTORE:FOR J=1 TO 13
  :READ C$'IMXG
32 C$((I-1)*13+J)="[SHFT O,CMDR Y2,
  SHFT P,DOWN,LEFT4,CMDR G]" +Q$(I)+"
  [LEFT2]" +C$+"[RIGHT,BLACK,CMDR M,
  DOWN,LEFT4,SHFT L,CMDR P2,SHFT @,
  DOWN,LEFT4]":NEXT:NEXT'KUTD
33 FOR I=0 TO 7:READ A:POKE B+I,A:NEXT
  :DATA 158,146,146,146,146,146,158,
  0'IQCP
40 FOR I=1 TO 52:U(I)=0:NEXT
  :FOR I=1 TO 27:B(I)=0:DK(I)=0:NEXT
  :DP=0:PRINT"[CLEAR]"'NKFQ
41 FOR I=1 TO 7:P(I)=I:FOR J=1 TO
  I'HNXI
42 X=INT(RND(0)*52)+1:IF U(X) THEN
  42'HQKK
```



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# KLONDIKE SOLITAIRE

```

44 U(X)=-1:D(I,J)=X'DNKG
46 NEXT:NU(I)=I-1:NEXT:FOR I=1 TO 4
   :NF(I)=0:NEXT'JVFO
50 X=INT(RND(0)*52)+1:IF U(X) THEN
   50'HQJJ
52 U(X)=-1 : DK(DP+1)=X : DP=DP+1
   : IF DP<24 THEN GOTO 50'KCVQ
53 C$(0)=B$:ND=24'CMCH
54 PRINT"[CLEAR,SPACE10]
   KLONDIKE SOLITAIRE"BAEM
56 PRINT"[DOWN4] SPADES [SPACE2] HEARTS
   [SPACE2] DIAMONDS [SPACE3] CLUBS
   [SPACE4] BONE";'BBIS
57 FOR I=1 TO 4:IF NF(I)=0 THEN PRINT
   SPC(9);:GOTO 59'JQOR
58 PRINT C$(13*(I-1)+NF(I)) "[RIGHT8,
   UP3] ";'EQRR
59 NEXT:PRINT C$(B(1)):PRINT"[UP]";
   'DLMO
60 PRINT" 1 ";:FOR I=2 TO 7
   :PRINT"[SPACE3]"I;:NEXT:PRINT'HKDJ
61 PRINT SPC(6);:FOR I=2 TO 7'FHFH
62 IF NU(I) THEN PRINT"[BLUE,RVS,
   SPACE2]"CHR$(NU(I)+48)" [RVOFF,
   BLACK]";:GOTO 64'GSSN
63 PRINT SPC(4);'CDOG
64 IF I<7 THEN PRINT"[SPACE2]";'EDUJ
65 NEXT'BAEH
70 FOR I=1 TO 7:NP=0:B=NU(I)
   :IF P(I)=0 THEN PRINT"[RIGHT6]";
   :GOTO 78'KYCP
71 IF P(I)-B>5 THEN B=P(I)-4
   :PRINT C$(D(I,NU(I)+1)) "[UP]";
   :NP=1'JIYR
72 FOR J=B+1 TO P(I):PRINT C$(D(I,
   J)) "[UP]";:NEXT:PRINT"[DOWN]";
   :NP=NP+P(I)-B'KHMT
74 IF NP>1 THEN FOR K=2 TO NP
   :PRINT"[UP2]";:NEXT'IKUP
76 IF I<7 THEN PRINT"[UP3,RIGHT4,
   SPACE2]";'EDMO
78 NEXT'BAEL
80 U=0:FOR I=1 TO 4:U=U+NF(I):NEXT
   :IF U<52 THEN 85'KVDP
82 PRINT"[HOME]"SPC(40)"[HOME,SPACE10]
   YOU HAVE WON !!!!![DOWN]"
   : GOTO 141'DHYO
85 IF DK(1)>0 OR B(1)>0 THEN 100'FOKP
86 U=0:FOR I=1 TO 7:U=U+NU(I):NEXT
   :IF U>0 THEN 100'KVAV
87 PRINT"[HOME,SPACE6] YOUR VICTORY IS
   INEVITABLE!!"BAJU
100 W$="":PRINT"[LOCK,BLACK,RVOFF,
   HOME,DOWN]PLAY: 1-7,
   B (BONE) D (DRAW) Q (QUIT)
   [SPACE3,LEFT2]>";'CESI
101 GET W$:PRINT W$;:IF VAL(W$)>0 AND
   VAL(W$)<8 THEN 115'JUSG
102 ON -(W$="B")-2*(W$="D")-3*(W$="Q")
   +1 GOTO 100,110,127,140'LFUK
110 GOSUB 150:Q=B(1):IF W$<>" THEN
   113'GPED
  
```

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```

111 IF C1=CK(Q,1)OR C1=CK(Q,
    2) THEN P(L)=P(L)+1:D(L,P(L))=B(1)
    :GOTO 157'JUKM
112 GOTO 200'BDBY
113 IF B(1)-1 = 13*(S-1)+NF(S) THEN
    NF(S)=NF(S)+1 : GOTO 157'KGHM
114 GOTO 200'BDBB
115 W=VAL(W$):IF P(W)=0 THEN 200'FONH
116 W=VAL(W$):GOSUB 150:Q=D(W,P(W))
    :IF W$<>"OR(W=L) THEN 123'KFWP
117 FOR I=P(W)TO NU(W)+1 STEP-1
    :B=D(W,I):IF CK(B,1)<>C1 AND CK(B,
    2)<>C1 THEN 122'ORYV
118 FOR J=I TO P(W):D(L,
    P(L)+J-I+1)=D(W,J):NEXT'IBPP
119 P(L)=P(L)+P(W)-I+1:P(W)=I-1
    :P(W)=-(P(W)>=0)*P(W)
    :P(L)=-(P(L)>=0)*P(L)'QDDD
121 GOTO 125'BDHY
122 NEXT : GOTO 200'CEOA
123 IF Q-1<>13*(S-1)+NF(S) THEN
    200'IQXI
124 NF(S)=NF(S)+1:P(W)=P(W)-1'EVI
125 IF P(W)=NU(W) AND NU(W)>0 THEN
    NU(W)=NU(W)-1'HBMN
126 GOTO 54'BCQD
127 IF ND>0 THEN 133'DGJH
128 FOR X=1 TO 24:IF B(X)<>0 THEN
    NEXT'IKAM
129 FOR I=1 TO X-1:DK(I)=B(X-I)
    :B(X-I)=0:NEXT:ND=X-1'LDAT
133 FOR P=24 TO 4 STEP-1:B(P)=B(P-3)
    :NEXT:FOR I=1 TO 3:B(I)=DK(4-I)
    :NEXT'OHTQ
134 ND=ND-3:FOR P=1 TO 24
    :DK(P)=DK(P+3):NEXT'IXTM
135 IF B(3)>0 THEN G=2: IF B(2)>0
    THEN G=1: IF B(1)>0 THEN 54'LXKO
136 FOR I=1 TO 27-G:B(I)=B(I+G):NEXT
    :GOTO 54'ITPN
140 PRINT"ARE YOU SURE (Y/N)?"
    :WAIT 198,1:GET OK$:PRINT OK$
    :IF OK$<>"Y" THEN 54'IVEO
141 PRINT"DO YOU WANT TO PLAY AGAIN?"
    :WAIT 198,1:GET OK$
    :IF OK$<>"Y" THEN END'IPAP
142 PRINT"Y":GOTO 40'CEJD
150 PRINT"WHERE TO: COLUMN 1-7, S,H,D,
    C[SPACE4,LEFT2]>":GET W$
    :PRINT W$'DHCM
152 L=VAL(W$): IF L>0 AND L<8 THEN
    C1=D(L,P(L)): W$="" : RETURN'KARO
153 S=-(W$="S")-2*(W$="H")-3*(W$="D")
    -4*(W$="C")'MUHQ
154 IF S=0 THEN PRINT"[UP]";
    :GOTO 150'FHMJ
155 RETURN'BAQF
157 FOR P=1 TO 26:B(P)=B(P+1):NEXT
    :GOTO 54'HSCP
200 PRINT"YOU TRYING TO CHEAT,
    PODNER?":FOR M=1 TO 1500:NEXT
    :POKE 198,0:GOTO 54'HRGL
  
```

END

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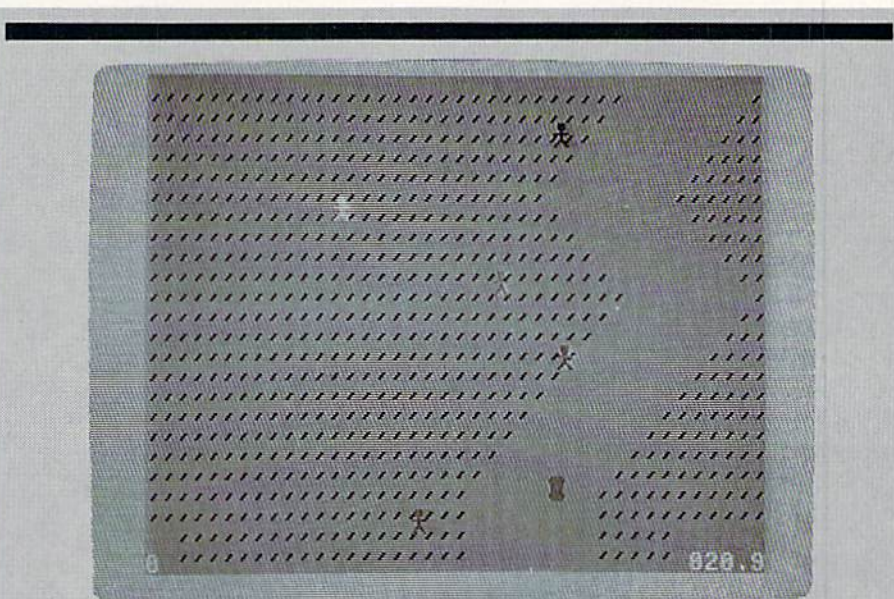
## 100 Mile Race for the Commodore 64

I'm sure everyone has seen many road-racing games for the Commodore 64. Most have drawbacks: Some are too slow, some are too long and boring, and sometimes it is hard to control the car.

100 Mile Race is different. Since the main program is written entirely in machine language, it is very fast. There are four speeds, selected by moving the joystick up and down. The current gear (zero through four) is displayed in the lower-left corner of the screen. Compiled mileage is displayed in the lower-right corner.

The course is anything but boring. If you are a good driver, you can complete the 100-mile course in about two minutes. But there are many obstacles. Roads wind randomly and pedestrians cross in front of you quite often. If you hit one or go off the road, you must wait while a funeral march is played. The race is timed in real time. Too many crashes or running in low gears will result in a low score.

The left-right movements of the car are controlled by moving the joystick. You will be surprised at the precise control you have. The car will also move up and down slightly as you upshift and downshift. This makes it possible to



*During this timed road-race, pedestrians insist upon crossing in front of you. If you hit one or go off the road, you must wait while a funeral march is played.*

avoid all obstacles.

To play, plug a joystick into port 1 and type RUN, followed by a RETURN. The program will take a few seconds to load the machine language, graphics and sound data. A road will form and pedestrian shapes will dot the screen. The red car you will control is near the bottom in

the middle of the road. Begin moving forward when you see the word GO appear at the bottom of the screen. The internal race timer will start then. The final score is your elapsed time, given at the end.

The game is simple—but takes a while to master. I suggest that you compete against others for best times. Have fun! **C**

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

### 100 Mile Race

```
10 REM BACKGROUND COLORS'BQOC
20 POKE 53280,13:POKE 53281,15
:PRINT"[BLACK]"DSRD
30 POKE 53269,0:REM ALL SPRITES
OFF'CVMF
40 PRINT"[CLEAR]"BATB
50 PRINT"[DOWN10]"TAB(14)"PLEASE
WAIT"CDPG
60 POKE 54277,0:POKE 54278,240
:POKE 54282,8:POKE 54294,128'EKOL
70 POKE 54284,85:POKE 54285,133
:POKE 54291,10:POKE 54292,197'EMRM
80 FOR A=0 TO 251'DFXG
90 READ B:POKE 21504+A,B'DKNI
100 NEXT'BAEU
110 FOR A=0 TO 174'DFCX
120 READ B:POKE 20484+A,B'DKTA
```

```
130 NEXT'BAEX
170 V=53248:CY=180:CY=212'DSYI
180 REM CLEAR PIXEL'BKTG
190 FOR I=12288 TO 12798:POKE I,0
:NEXT'FQWK
200 REM TURN ON SPRITE MEMORY
LOCATIONS'BCIE
210 FOR I=0 TO 7:POKE 2040+I,192+I
:NEXT'HPKE
220 POKE V+39,2:FOR I=4 TO 10
:POKE V+I+36,I:NEXT
:REM COLORS'KAWK
230 REM SHAPE OF CAR'BKGC
240 FOR J=0 TO 448 STEP 64'EHEE
250 FOR I=12288+J TO 12315+J STEP
3'GODH
260 READ B:POKE I,B'CFFE
270 NEXT'BAED
280 NEXT'BAEE
320 FOR A=0 TO 79'DEIB
330 READ B:POKE 20736+A,B'DKTD
340 NEXT'BAEB
```



# GAME PROGRAMS/100 MILE RACE

```

350 FOR A=0 TO 132'DFVE
360 READ B:POKE 21024+A,B'DKKG
370 NEXT'BAEE
380 FOR A=0 TO 144'DFYH
390 READ B:POKE 21251+A,B'DKMJ
400 NEXT'BAEX
410 FOR A=0 TO 140'DFUB
420 READ B:POKE 21763+A,B'DKUD
430 NEXT'BAEB
440 FOR A=0 TO 173'DFBE
450 READ B:POKE 22020+A,B'DKHG
460 NEXT'BAEE
470 PRINT"[CLEAR]"BATG
471 POKE V,CX:POKE V+1,CY
:POKE V+14,180:POKE V+15,225
:POKE V+16,66'JIST
472 POKE 20480,48:POKE 20481,48
:POKE 20482,48:POKE 20483,48'EKDQ
473 POKE 20994,88:POKE 20995,45
:POKE 20996,46:POKE 20997,75'EKRR
474 POKE 20998,176:POKE 20999,105
:POKE 21000,160:POKE 21001,
135'EOET
475 POKE 21002,160:POKE 21003,165
:POKE 21004,18:POKE 21005,195
:POKE 21007,225'FXTW
476 POKE 21010,88:POKE 21011,2
:POKE 21012,16:POKE 21013,4'EIET
477 POKE 21014,236:POKE 21015,8
:POKE 21016,70:POKE 21017,16'EKOY
478 POKE 21018,34:POKE 21019,32
:POKE 21020,124:POKE 21021,64'ELGW
479 POKE 21248,48:POKE 21249,0
:POKE 21250,0'DYIU
480 POKE 21760,0:POKE 21761,0
:POKE 21762,0'DXEM
481 POKE 22016,15:POKE 22017,24
:POKE 22018,0:POKE 22019,4
:POKE V+3,45'GOQS
482 POKE V+5,75:POKE V+7,105
:POKE V+9,135:POKE V+11,165
:POKE V+13,195'KKWV
483 POKE V+2,88:POKE V+4,46
:POKE V+6,176:POKE V+8,160
:POKE V+10,160:POKE V+12,18'MPPA
489 PRINT TAB(12) "[DOWN3]100 MILE
[SPACE2]RACE[RVOFF]"CDDU
490 PRINT TAB(12) "[DOWN,RVS]
BY RANDY MEYLE"CDDM
495 PRINT TAB(12) "[DOWN,RVS]
NAPERVILLE, IL"CDCR
500 PRINT TAB(9) "[DOWN6]
JOYSTICK IN PORT[SPACE2,RVS] 1
[RVOFF]"CCTG
510 PRINT TAB(9) "[DOWN]MOVE LEFT
[SPACE2]AND[SPACE2]RIGHT"CCSH
520 PRINT TAB(9) "[DOWN]
SHIFT GEARS UP & DOWN"CCAI
530 PRINT TAB(9) "[DOWN]HIT [RVS] S
[RVOFF] KEY TO[SPACE2]BEGIN"CCGJ
550 GET AS:IF AS=""THEN 555'EIOI
555 FOR X=0 TO 13:POKE 55468+X,
INT(RND(0)*8+4):NEXT'KUQT
560 IF AS<>"S"THEN 550'EFHI
590 PRINT"[CLEAR]":POKE V+21,255
:REM TURN ON SPRITES'EWCR
592 POKE 56216,15:POKE 56217,15
:POKE 56257,15:POKE 56250,15
:POKE 56290,15'FTGV
594 POKE 56251,15:POKE 56252,15
:POKE 56253,15:POKE 56254,15
:POKE 56255,15'FTFX
596 POKE 56256,1:POKE 56292,1
:POKE 56293,1:POKE 56294,1'EGKW
597 POKE 56295,1:POKE 56291,1
:POKE 1984,48'DXOV
598 POKE 2019,48:POKE 2020,48
:POKE 2021,48:POKE 2022,46
:POKE 2023,48'FODB
600 REM INITIAL ROAD'BLPD
610 FOR Y=0 TO 800 STEP 40'EHHF
620 FOR X=Y TO Y+15'EFPE
630 POKE 1064+X,39:POKE 1088+X,39'ERFJ
640 NEXT'BAEE
650 NEXT'BAEF
655 POKE 2003,7:POKE 2004,15
:POKE 2005,33'DWSQ
660 T=INT(TI/60)'DHMJ
670 FOR X=0 TO 1000'DGGK
700 SYS 21251'BFCC
720 SYS 20736'BFJE
730 SYS 22020'BFWF
740 SYS 20736'BFJG
750 SYS 21024'BFAH
760 SYS 20736'BFJI
770 SYS 20484'BFJJ
780 SYS 20736'BFJK
790 SYS 21763'BFKL
800 NEXT'BAEC
801 FOR X=1 TO 2000:NEXT'EHSV
802 POKE V+21,0:PRINT"[CLEAR]"DGNH
804 TF=INT(TI/60):M=INT((TF-T)/60)
:S=(TF-T)-60*M'LEMU
805 PRINT"[WHITE,HOME]ELAPSED TIME =
";M;"MINUTES AND";S;"SECONDS"BGYS
806 PRINT TAB(12) "[WHITE,DOWN10]
PLAY AGAIN? [RVS] Y/N [RVOFF]
"CDIP
807 GET BS:IF BS=""THEN 807'EIQN
808 IF BS="Y"THEN PRINT"[BLACK]"
:GOTO 470'FGSP
809 IF BS<>"N"THEN 807'EFIO
810 PRINT"[CLEAR]":END'CBFE
815 REM SOUND EFFECT DATA(21504)'BWSO
820 DATA 135,97,33,8,17,65,135,97,33,
8,17,65,135,97,33,8,17,65,135,97,
33'BNHQ
830 DATA 8,17,65,135,97,33,8,17,65,
135,97,33,8,16,64,135,247,33,9,17,
65'BMBR
840 DATA 135,247,33,9,17,65,135,247,
33,9,17,65,135,247,33,9,16,65'BGBR
850 DATA 135,247,33,9,17,65,12,247,1,
9,0,64,135,143,33,12,17,65,135,

```

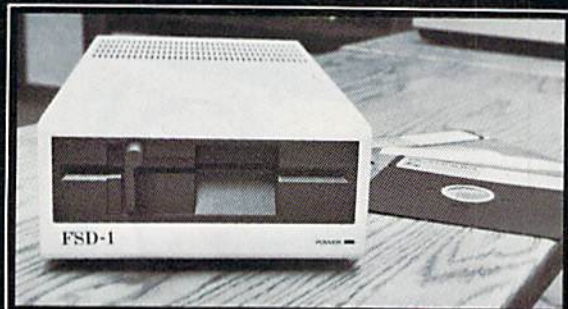


# 100 MILE RACE

```

143'BMMT
860 DATA 33,12,17,65,135,143,33,12,17,
65,135,143,33,12,17,65,135,143,33,
12'BPVU
870 DATA 17,65,135,143,33,12,16,64,
223,247,39,9,17,65,223,247,39,9,
17,65'BNNV
880 DATA 223,247,39,9,17,65,223,247,
39,9,16,65,162,247,37,9,17,65,12,
247,1'BPNX
890 DATA 9,0,64,162,97,37,8,17,65,162,
97,37,8,17,65,162,97,37,8,17,65,
162'BOFY
900 DATA 97,37,8,16,65,135,97,33,8,17,
65,12,97,1,8,0,64,135,71,33,6,17,
65'BONP
910 DATA 135,71,33,6,17,65,135,71,33,
6,17,65,135,71,33,6,16,65,165,71,
31,6'BPMR
920 DATA 17,65,12,71,1,6,0,64,135,97,
33,8,17,65,135,97,33,8,17,65,135,
97'BNLR
930 DATA 33,8,17,65,135,97,33,8,17,65,
135,97,33,8,17,65,135,97,33,8,16,
64'BOBS
940 REM SCREEN SCROLL ROUTINE
(SYS20484)'BEYP
950 DATA 162,250,189,197,6,157,237,6,
202,208,247,162,250,189,203,5,
157'BLTU
960 DATA 243,5,202,208,247,162,250,
189,209,4,157,249,4,202,208,247,
162,210'BPQW
970 DATA 189,255,3,157,39,4,202,208,
247,162,40,169,32,157,255,3,202,
208,250'BQUX
980 DATA 162,46,142,190,7,174,0,80,
232,224,58,240,25,142,191,7,142,0,
80'BMGX
990 DATA 174,1,80,142,189,7,174,2,80,
142,188,7,174,3,80,142,187,7,96,
162,48'BQKA
1000 DATA 142,0,80,142,191,7,174,1,80,
232,224,58,240,19,142,189,7,142,
1,80'BOHF
1010 DATA 174,2,80,142,188,7,174,3,80,
142,187,7,96,162,48,142,1,80,142,
189'BOMG
1020 DATA 7,174,2,80,232,224,58,240,
13,142,188,7,142,2,80,174,3,80,
142,187'BOPH
1030 DATA 7,96,162,48,142,2,80,142,
188,7,174,3,80,232,142,3,80,142,
187,7,96'BPBJ
1040 REM SPRITE SHAPES(12288)'BTCC
1050 DATA 126,255,255,126,126,126,126,
255,255,126'BOVG
1060 DATA 60,60,60,24,255,24,24,60,
102,195'BHQF
1070 DATA 60,60,60,24,255,24,24,60,
102,195'BHQG
    
```

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Telex 706017 (AV ALARM UD)

## 100 MILE RACE

```

1080 DATA 60,60,60,24,255,24,24,60,
      102,195'BHQH
1090 DATA 60,60,60,24,255,24,24,60,
      102,195'BHQI
1100 DATA 60,60,60,24,255,24,24,60,
      102,195'BHQA
1110 DATA 60,60,60,24,255,24,24,60,
      102,195'BHQB
1120 DATA 60,60,60,24,255,24,24,60,
      102,195'BHQC
1130 REM JOYSTICK LEFT-RIGHT (SYS20736)
      'BDNF
1135 DATA 160,0,174,0,208,224,32,208,
      7,173,16,208,41,1,240,41,224,
      72'BIBN
1137 DATA 208,9,173,16,208,41,1,240,2,
      160,1'BIHK
1140 DATA 173,1,220,41,4,208,18,202,
      202,224,254,208,8,173,16,208,41,
      254'BLBK
1150 DATA 141,16,208,142,0,208,96,136,
      240,22,173,1,220,41,8,208,15,232,
      232'BORL
1160 DATA 208,8,173,16,208,9,1,141,16,
      208,142,0,208,96'BTDI
1170 REM PEOPLE MOVE (SYS21024) 'BULG
1200 DATA 162,0,160,2,189,2,82,192,1,
      208,28,24,105,6,201,0,208,11,173,
      16'BMPH
1210 DATA 208,93,19,82,141,16,208,169,
      0,157,2,208,157,2,82,200,76,96,
      82,56'BOLI
1220 DATA 233,6,201,254,208,11,173,16,
      208,93,19,82,141'BTFC
1230 DATA 16,208,169,254,157,2,208,
      157,2,82,136,189,3,82,24,105,
      6'BFSJ
1240 DATA 201,5,208,28,224,2,240,16,
      224,4,240,12,173,16,208,93,19,82,
      141'BMAL
1250 DATA 16,208,189,18,82,157,2,208,
      157,2,82,169,45,157,3,208,157,3,
      82,232'BPJN
1260 DATA 232,224,12,208,146,173'BWRF
1270 DATA 15,82,24,105,6,201,5,208,2,
      169,45,141,15,82,141,15,208,
      96'BHUN
1280 REM GEARS-JOYSTICK
      UPDOWN (SYS21251) 'BFWL
1290 DATA 173,1,220,41,1,208,28,174,0,
      83,224,52,240,51,232,142,0,83,
      174'BLSQ
1300 DATA 1,208,202,202,202,202,202,
      202,202,202'BMVD
1310 DATA 142,1,208,76,70,83,173,1,
      220,41,2,208,25,174,0,83,224,48,
      240,18'BNDJ
1320 DATA 202,142,0,83,174,1,208,232,
      232,232,232,232,232,232,142,
      1,208'BOGK
1330 DATA 173,0,83,141,152,7,174,0,83,
  
```



# 100 MILE RACE

- 224,52,240,64,224,51,208,8,  
160'BIQK
- 1332 DATA 5,140,2,83,76,129,83,224,50,  
208,8,160,15,140,2,83,76,129,83,  
224'BNVN
- 1334 DATA 49,208,8,160,45,140,2,83,76,  
129,83,224,48,208,6,142,192,7,76,  
3'BMMP
- 1336 DATA 83,172,1,83,200,140,1,83,  
208,247,174,2,83,202,142,2,83,  
208,238,96'BPJS
- 1340 REM COLLISION CHECK(SYS21763)  
'BYKG
- 1350 DATA 173,0,85,201,3,240,14,105,1,  
141,0,85'BLOI
- 1360 DATA 169,254,45,30,208,45,31,208,  
96,162,0,169,1,45,30,208,208,  
8'BIIN
- 1370 DATA 169,1,45,31,208,208,1,96,  
169,0,141,0,85,169,31,141,24,  
212'BHUO
- 1380 DATA 189,0,84,141,0,212,232,189,  
0,84,141,7,212,232,189,0,84,141,  
1,212'BOYQ
- 1390 DATA 232,189,0,84,141,8,212,232,  
189,0,84,141,4,212,232,189,0,84,  
141,11'BPAS
- 1400 DATA 212,172,1,85,200,140,1,85,  
208,247,172,2,85,200,140,2,85,  
192,20'BMVJ
- 1410 DATA 208,236,169,0,141,2,85,232,  
224,252,208,175,172,1,85,200'BFAJ
- 1420 DATA 140,1,85,208,247,172,2,85,  
200,140,2,85,208,238,141,24,212,  
96'BKPL
- 1430 REM WINDING ROAD(SYS22020)'BVLG
- 1432 DATA 174,3,86,232,142,3,86,224,5,  
208,32,162,0,142,3,86'BYOL
- 1434 DATA 32,222,255,162,0,141,2,86,  
169,1,45,2,86,208,1,232,169,2,45,  
2,86'BNJQ
- 1436 DATA 208,1,232,142,2,86'BSWJ
- 1440 DATA 174,0,86,208,5,162,2,142,2,  
86,174,1,86'BNQI
- 1450 DATA 224,39,208,5,162,0,142,2,86,  
174,2,86,224,1,208,27,174'BDKM
- 1460 DATA 0,86,169,39,157,0,4,202,224,  
255,208,248,174,1,86,169,39,  
157'BJDO
- 1470 DATA 0,4,232,224,40,208,248,96,  
174,2,86,208,35,174,0,86,202,142,  
0,86'BNPQ
- 1480 DATA 169,39,157,0,4,202,224,255,  
208,248,174,1,86,202,142,1,86,  
169,39'BNJR
- 1490 DATA 157,0,4,232,224,40,208,248,  
96,174,0,86,232,142,0,86,169,39,  
157'BMHS
- 1500 DATA 0,4,202,224,255,208,248,174,  
1,86,232,142,1,86,169,39,157,0,4,  
232'BOOK
- 1510 DATA 224,40,208,248,96'BRNC

(END)

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# HOW TO ENTER PROGRAMS

The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN,RIGHT2] would mean to press the cursor-down key once and then the cursor-right key twice. Note: Do not enter the commas.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHIFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The following chart tells you the keys to press for any word or words inside of brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to the keystrokes shows you what you will see on the screen.

## Syntax Error

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "Syntax Error Break In Line 270," type LIST 270 and press RETURN.

This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parentheses. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the wrong line to look at. If the line the syntax error refers to has a function call (e.g., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

## Illegal Quantity Error

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X,...). This error is telling you that this variable is out of range. If the variable is being read from data statements, then the prob-

lem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

## Out Of Data Error

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

## Other Problems

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long and the 128 a line up to 160 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than the standard number of characters on one line.

S "[HOME]" = UNSHIFTED CLR/ HOME	P "[PURPLE]" = CONTROL 5	F "[F1]" = F1
C "[CLEAR]" = SHIFTED CLR/HOME	G "[GREEN]" = CONTROL 6	F "[F2]" = F2
D "[DOWN]" = CURSOR DOWN	B "[BLUE]" = CONTROL 7	F "[F3]" = F3
U "[UP]" = CURSOR UP	Y "[YELLOW]" = CONTROL 8	F "[F4]" = F4
R "[RIGHT]" = CURSOR RIGHT	O "[ORANGE]" = COMMODORE 1	F "[F5]" = F5
L "[LEFT]" = CURSOR LEFT	B "[BROWN]" = COMMODORE 2	F "[F6]" = F6
R "[RVSL]" = CONTROL 9	L "[L. RED]" = COMMODORE 3	F "[F7]" = F7
R "[RVOFF]" = CONTROL 0	G "[GRAY1]" = COMMODORE 4	F "[F8]" = F8
B "[BLACK]" = CONTROL 1	G "[GRAY2]" = COMMODORE 5	P "[POUND]" = ENGLISH
W "[WHITE]" = CONTROL 2	L "[L. GREEN]" = COMMODORE 6	P "[PI]" = PI SYMBOL
R "[RED]" = CONTROL 3	L "[L. BLUE]" = COMMODORE 7	U "[UP]" = UP ARROW
C "[CYAN]" = CONTROL 4	G "[GRAY3]" = COMMODORE 8	

GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY ("[SHFT Q,SHFT J,SHFT D,SHFT S]") OR THE LETTERS CMDR (COMMODORE) AND A KEY ("[CMDR Q,CMDR G,CMDR Y,CMDR H]"). IF A SYMBOL IS REPEATED, THE NUMBER OF REPETITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA ("[SPACE3,SHFT S4,CMDR M2]").



# HOW TO ENTER PROGRAMS

You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are in your user guide.

If you type a line that is longer than the acceptable number of characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed (without a line number). Many people write that the computer gives them a syntax error when they type the line, or that the computer refuses to accept a line. Both of these problems are results of typing a line that has too many characters.

## The Program Won't Run!!

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each

line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is "running." Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

## If All Else Fails

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program. The user group may also have the program on a library disk and be willing to make a copy for you. For \$9.95 per issue, you can also get all the BASIC programs in each issue, as well, from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your

errors and increase your understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program

The issue of the magazine it was in

The computer you are using

Any error messages and the line numbers

Anything displayed on the screen

A printout of your listing (if possible)

All of this information is helpful in answering your questions about why a program doesn't work. A letter that simply states "I get an error in line 250 whenever I run the program" doesn't give us much to go on. Send your questions to:

Commodore Magazines

1200 Wilson Drive

West Chester, PA 19380

ATTN: Program Problem



# HOW TO USE THE MAGAZINE ENTRY PROGRAMS

**T**he Magazine Entry Programs on the next pages are two BASIC machine language programs that will assist you in entering the programs in this magazine correctly. There are versions for both the Commodore 64 and the Commodore 128. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

## Getting Started

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 49900 (4864-5545 on the 128) and just lets you know that the program is running. If everything is ok, the program will finish running and say DONE. Then type NEW. If there is a problem with the data statements,

the program will tell you where to find the problem. Otherwise the program will say "mistake in data statements." Check to see if commas are missing, or if you have used periods instead of commas. Also check the individual data items.

Once the program has run, it is in memory ready to go. To activate the program type SYS49152 (SYS4864 on the 128), and press RETURN. You are now ready to enter the programs from the magazine. To disable the Entry Program, just type KILL (RETURN) on the 64 or SYS4867 on the 128.

The checksums for each line are the same for both the 64 and 128, so you can enter your 64 programs on the 128 if you'd like.

## Typing the Programs

All the BASIC program listings in this magazine that are for the 64 or 128 have an apostrophe followed by four letters at the end of the line (e.g., 'ACDF). If you plan to use the Magazine Entry Program to enter your programs, the apostrophe and letters **should** be entered along with the

rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

## IMPORTANT

If the Magazine Entry Program sees a mistake on a line, it **does not** enter that line into memory. This makes it impossible to enter a line incorrectly.

## Error Messages and What They Mean

There are five error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

*Continued next page*



# HOW TO USE THE MAGAZINE ENTRY PROGRAMS

**NO CHECKSUM:** This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

**QUOTE:** This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

**KEYWORD:** This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT, ...) incorrectly. Check

the line in the magazine again and check your spelling.

**# OF CHARACTERS:** This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too

many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

**UNIDENTIFIED:** This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word misspelled. Check the line in the magazine again and correct the mistake. C

## MAGAZINE ENTRY PROGRAM-64

The Magazine Entry Programs are available on disk, along with the other programs in this magazine, for \$9.95. To order, contact Loadstar at 1-800-831-2694.

```
10 PRINT "[CLEAR] POKING -";
20 P=49152:REM $C000 (END AT
   49900/$C2EC)
30 READ A$:IF A$="END"THEN 110
40 L=ASC(MID$(A$,2,1))
50 H=ASC(MID$(A$,1,1))
60 L=L-48:IF L>9 THEN L=L-7
70 H=H-48:IF H>9 THEN H=H-7
80 PRINT "[HOME,RIGHT12]"P;
90 IF H>15 OR L>15 THEN PRINT
   :PRINT"DATA ERROR IN LINE";
   1000+INT((P-49152)/8):STOP
100 B=H*16+L:POKE P,B:T=T+B:P=P+1
   :GOTO 30
110 IF T<>86200 THEN PRINT
   :PRINT"MISTAKE IN DATA --> CHECK
   DATA STATEMENTS":END
120 PRINT"DONE":END
1000 DATA 4C,1F,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,00,0D,00,21
1002 DATA C1,27,C1,2F,C1,3F,C1,4C
1003 DATA C1,EA,EA,EA,4C,54,C0,A2
1004 DATA 05,BD,19,C0,95,73,CA,10
1005 DATA F8,60,60,A0,03,B9,00,02
1006 DATA D9,04,C1,D0,F5,88,10,F5
1007 DATA A0,05,B9,A2,E3,99,73,00
1008 DATA 88,10,F7,A9,00,8D,18,D4
1009 DATA 4C,EF,C0,E6,7A,D0,02,E6
1010 DATA 7B,4C,79,00,A5,9D,F0,F3
1011 DATA A5,7A,C9,FF,D0,ED,A5,7B
1012 DATA C9,01,D0,E7,20,2B,C0,AD
1013 DATA 00,02,20,74,C0,90,DC,A0
1014 DATA 00,4C,A9,C1,C9,30,30,06
1015 DATA C9,3A,10,02,38,60,18,60
1016 DATA C8,B1,7A,C9,20,D0,03,C8
1017 DATA D0,F7,B1,7A,60,18,C8,B1
1018 DATA 7A,F0,37,C9,22,F0,F5,6D
1019 DATA 03,C0,8D,03,C0,AD,04,C0
1020 DATA 69,00,8D,04,C0,4C,8E,C0
1021 DATA 18,6D,05,C0,8D,05,C0,90
1022 DATA 03,EE,06,C0,EE,09,C0,4C
1023 DATA CE,C1,18,6D,08,C0,8D,08
1024 DATA C0,90,03,EE,07,C0,EE,0A
```

```
1025 DATA C0,60,0A,A8,B9,0F,C0,85
1026 DATA FB,B9,10,C0,85,FC,A0,00
1027 DATA A9,12,20,D2,FF,B1,FB,F0
1028 DATA 06,20,D2,FF,C8,D0,F6,20
1029 DATA BC,C2,20,E4,FF,F0,FB,A0
1030 DATA 18,B9,08,C1,20,D2,FF,88
1031 DATA 10,F7,68,68,A9,00,8D,00
1032 DATA 02,4C,74,A4,4B,49,4C,4C
1033 DATA 91,91,0D,20,20,20,20,20
1034 DATA 20,20,20,20,20,20,20,20
1035 DATA 20,20,20,20,20,20,20,91
1036 DATA 0D,51,55,4F,54,45,00,4B
1037 DATA 45,59,57,4F,52,44,00,23
1038 DATA 20,4F,46,20,43,48,41,52
1039 DATA 41,43,54,45,52,53,00,55
1040 DATA 4E,49,44,45,4E,54,49,46
1041 DATA 49,45,44,00,4E,4F,20,43
1042 DATA 48,45,43,4B,53,55,4D,00
1043 DATA C8,B1,7A,D0,FB,84,FD,C0
1044 DATA 09,10,03,4C,84,C1,88,88
1045 DATA 88,88,88,B1,7A,C9,27,D0
1046 DATA 13,A9,00,91,7A,C8,A2,00
1047 DATA B1,7A,9D,3C,03,C8,E8,E0
1048 DATA 04,D0,F5,60,A9,04,4C,CA
1049 DATA C0,A0,00,B9,00,02,99,40
1050 DATA 03,F0,F0,C8,D0,F5,A0,00
1051 DATA B9,40,03,F0,E6,99,00,02
1052 DATA C8,D0,F5,20,96,C1,4C,12
1053 DATA C2,A0,09,A9,00,99,03,C0
1054 DATA 8D,3C,03,88,10,F7,A9,80
1055 DATA 85,02,A0,00,20,58,C1,20
1056 DATA 89,C1,20,ED,C1,E6,7A,E6
1057 DATA 7B,20,7C,A5,A0,00,20,80
1058 DATA C0,F0,D0,24,02,F0,06,4C
1059 DATA A8,C0,4C,CE,C1,C9,22,D0
1060 DATA 06,20,8D,C0,4C,CE,C1,20
1061 DATA BA,C0,4C,CE,C1,A0,00,B9
1062 DATA 00,02,20,74,C0,C8,90,0A
1063 DATA 18,6D,07,C0,8D,07,C0,4C
1064 DATA EF,C1,88,A2,00,B9,00,02
1065 DATA 9D,00,02,F0,04,E8,C8,D0
1066 DATA F4,60,18,AD,09,C0,69,41
1067 DATA 8D,09,C0,38,AD,0A,C0,E9
1068 DATA 19,90,06,8D,0A,C0,4C,1C
1069 DATA C2,AD,0A,C0,69,41,8D,0A
```



```

1070 DATA C0,AD,03,C0,6D,05,C0,48
1071 DATA AD,04,C0,6D,06,C0,8D,0C
1072 DATA C0,68,6D,08,C0,8D,0B,C0
1073 DATA AD,0C,C0,6D,07,C0,8D,0C
1074 DATA C0,38,E9,19,90,06,8D,0C
1075 DATA C0,4C,52,C2,AD,0C,C0,69
1076 DATA 41,8D,0C,C0,AD,0B,C0,E9
1077 DATA 19,90,06,8D,0B,C0,4C,67
1078 DATA C2,AD,0B,C0,69,41,8D,0B
1079 DATA C0,A0,01,AD,09,C0,CD,3C
1080 DATA 03,D0,20,C8,AD,0A,C0,CD
1081 DATA 3D,03,D0,17,C8,AD,0B,C0

```

```

1082 DATA CD,3E,03,D0,0E,AD,0C,C0
1083 DATA CD,3F,03,D0,06,20,CC,C2
1084 DATA 4C,4B,C0,98,48,68,4C,CA
1085 DATA C0,A9,20,8D,00,D4,8D,01
1086 DATA D4,A9,09,8D,05,D4,A9,0F
1087 DATA 8D,18,D4,60,20,A9,C2,A9
1088 DATA 81,20,DF,C2,A9,80,20,DF
1089 DATA C2,4C,D9,C2,20,A9,C2,A9
1090 DATA 11,20,DF,C2,A9,10,20,DF
1091 DATA C2,A9,00,8D,04,D4,60,8D
1092 DATA 04,D4,A2,70,A0,00,88,D0
1093 DATA FD,CA,D0,FA,60,END

```

END

## MAGAZINE ENTRY PROGRAM-128

```

5 TRAP 200
10 PRINT"[CLEAR]POKING -";
20 P=4864:REM $1300 (END AT
5545/$15A9)
30 READ A$:IF A$="END"THEN 110
80 PRINT"[HOME,RIGHT12]"P;
100 B=DEC(A$):POKE P,B:T=T+B:P=P+1
:GOTO 30
110 IF T<>59314 THEN PRINT
:PRINT"MISTAKE IN DATA --> CHECK
DATA STATEMENTS":END
120 PRINT"DONE":END
200 PRINT:PRINT"DATA ERROR IN LINE";
1000+INT((P-4864)/8):END
1000 DATA 4C,1E,13,4C,3A,13,00,00
1001 DATA 8E,00,F7,00,42,41,51,57
1002 DATA 0D,00,0D,43,08,14,0E,14
1003 DATA 16,14,26,14,33,14,A9,00
1004 DATA 8D,00,FF,AD,04,03,8D,12
1005 DATA 13,AD,05,03,8D,13,13,A2
1006 DATA 4A,A0,13,8E,04,03,8C,05
1007 DATA 03,60,AD,12,13,8D,04,03
1008 DATA AD,13,13,8D,05,03,60,6C
1009 DATA 12,13,A5,7F,D0,F9,AD,00
1010 DATA 02,20,5B,13,90,F1,A0,00
1011 DATA 4C,6F,14,C9,30,30,06,C9
1012 DATA 3A,10,02,38,60,18,60,C8
1013 DATA B1,3D,C9,20,D0,03,C8,D0
1014 DATA F7,B1,3D,60,18,C8,B1,3D
1015 DATA F0,35,C9,22,F0,F5,6D,06
1016 DATA 13,8D,06,13,AD,07,13,69
1017 DATA 00,8D,07,13,4C,75,13,18
1018 DATA 6D,08,13,8D,08,13,90,03
1019 DATA EE,09,13,EE,0C,13,60,18
1020 DATA 6D,0B,13,8D,0B,13,90,03
1021 DATA EE,0A,13,EE,0D,13,60,0A
1022 DATA A8,B9,14,13,85,FB,B9,15
1023 DATA 13,85,FC,A0,00,8C,00,FF
1024 DATA A9,12,20,D2,FF,B1,FB,F0
1025 DATA 06,20,D2,FF,C8,D0,F6,20
1026 DATA 79,15,20,A3,15,20,E4,FF
1027 DATA F0,FB,A0,1B,B9,EF,13,20
1028 DATA D2,FF,88,10,F7,68,68,A9
1029 DATA 00,8D,00,02,4C,B7,4D,91
1030 DATA 91,0D,20,20,20,20,20,20
1031 DATA 20,20,20,20,20,20,20,20
1032 DATA 20,20,20,20,20,20,91,0D
1033 DATA 51,55,4F,54,45,00,4B,45
1034 DATA 59,57,4F,52,44,00,23,20
1035 DATA 4F,46,20,43,48,41,52,41

```

```

1036 DATA 43,54,45,52,53,00,55,4E
1037 DATA 49,44,45,4E,54,49,46,49
1038 DATA 45,44,00,4E,4F,20,43,48
1039 DATA 45,43,4B,53,55,4D,00,C8
1040 DATA B1,3D,D0,FB,C0,09,10,03
1041 DATA 4C,69,14,88,88,88,88,88
1042 DATA B1,3D,C9,27,D0,13,A9,00
1043 DATA 91,3D,C8,A2,00,B1,3D,9D
1044 DATA 00,0B,C8,E8,E0,04,D0,F5
1045 DATA 60,4C,5C,15,4C,C5,14,A0
1046 DATA 09,A9,00,99,06,13,8D,00
1047 DATA 0B,88,10,F7,A9,80,85,FD
1048 DATA A0,00,20,3F,14,20,AE,14
1049 DATA 20,0D,43,84,FA,A0,FF,20
1050 DATA 67,13,F0,D8,24,FD,F0,06
1051 DATA 20,8F,13,4C,8F,14,C9,22
1052 DATA D0,06,20,74,13,4C,8F,14
1053 DATA 20,9F,13,4C,8F,14,A0,00
1054 DATA B9,00,02,20,5B,13,C8,90
1055 DATA 0A,18,6D,0A,13,8D,0A,13
1056 DATA 4C,B0,14,88,60,18,AD,0C
1057 DATA 13,69,41,8D,0C,13,38,AD
1058 DATA 0D,13,E9,19,90,06,8D,0D
1059 DATA 13,4C,CF,14,AD,0D,13,69
1060 DATA 41,8D,0D,13,AD,06,13,6D
1061 DATA 08,13,48,AD,07,13,6D,09
1062 DATA 13,8D,0F,13,68,6D,0B,13
1063 DATA 8D,0E,13,AD,0F,13,6D,0A
1064 DATA 13,8D,0F,13,38,E9,19,90
1065 DATA 06,8D,0F,13,4C,05,15,AD
1066 DATA 0F,13,69,41,8D,0F,13,AD
1067 DATA 0E,13,E9,19,90,06,8D,0E
1068 DATA 13,4C,1A,15,AD,0E,13,69
1069 DATA 41,8D,0E,13,A0,01,AD,0C
1070 DATA 13,CD,00,0B,D0,20,C8,AD
1071 DATA 0D,13,CD,01,0B,D0,17,C8
1072 DATA AD,0E,13,CD,02,0B,D0,0E
1073 DATA AD,0F,13,CD,03,0B,D0,06
1074 DATA 20,89,15,A4,FA,60,98,48
1075 DATA 68,4C,AF,13,A9,04,4C,AF
1076 DATA 13,A9,00,8D,00,FF,A9,20
1077 DATA 8D,00,D4,8D,01,D4,A9,09
1078 DATA 8D,05,D4,A9,0F,8D,18,D4
1079 DATA 60,20,61,15,A9,81,20,9C
1080 DATA 15,A9,80,20,9C,15,4C,96
1081 DATA 15,20,61,15,A9,11,20,9C
1082 DATA 15,A9,10,20,9C,15,A9,00
1083 DATA 8D,04,D4,60,8D,04,D4,A2
1084 DATA 70,A0,00,88,D0,FD,CA,D0
1085 DATA FA,60,END

```

END



# USER GROUPS

Although there are almost 1000 known Commodore user groups nationwide and around the world, this list includes only those that have been officially recognized by Commodore as Approved User Groups. If your group would like to apply for Approved status, contact Pete Baczor, User Group Coordinator, at Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380.

Commodore user groups provide invaluable assistance to Commodore computerists. If you are looking for people who share your computing interests, or if you need help getting started with your computer, contact the group near you.

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## REVIEWS

Continued from pg. 38

ure out who the traitor is as quickly as possible and then ignore his comments.

The flight simulation has you pilot your small escape plane. A compass, altimeter and fuel gauge help you navigate. Again your companions will offer advice, and you should ignore one of them. This can be the most dangerous leg of your journey since the traitor, if he cannot delay you, may try to take over the plane. You also have to watch out for Doradian military jets.

The game's graphics and three different action modes will keep even children with short attention spans riveted to the screen. Because each of the three action modes is loaded into the computer's memory at once, there are no annoying delays.

*Escape* is a good entry-level adventure game for children ages 12 and up. The story line is interesting enough to keep their attention, yet the controls are simple enough to prevent frustration. The inclusion of both drive and flight simulators in a traditionally all-text game is an interesting development in the evolution of adventure games. Both are simple to control and graphically appealing, though neither approach the sophistication of a dedicated simulator. **C**

### Tips on Playing *Escape*

- You can use either joystick or keyboard commands to control your character, but I suggest you use a joystick. I found it much easier to control the plane and jeep.

- Spend plenty of time practicing before beginning your mission. This gives you a chance to try driving and flying without risk. Since there is no save option, you don't want to battle all the way to the jeep just to discover you don't know how to drive. In *Escape*, practice makes perfect. So if you want to save Turtalia—practice.

- Don't try to get past the police with forged identification papers—they almost always know the difference.

- Talk to all the characters you come across. Most will offer you something useful, if only advice. If you suspect something is a police trap, refuse to accept it. And finally, if you run into a mugger or thief, you are better off giving up your valuables than fighting. You can usually get replacement items, but if you fight, you may lose more than just your valuables. **C**

# DEVICE 1

## PRINTER INTERFACE

**P**rogressive Peripherals & Software, Inc. produced the number one, best selling printer interface available for Commodore computers, Easy Print with Graphics. Now after two years of research and development, we are proud to introduce Device One: Printer Interface. This remarkable interface brings more functions, power and features to Commodore users than anyone ever thought possible!

**R**eal product innovations are rare. Device One: Printer Interface has new desktop publishing features that can't be found in any other printer interface. What other printer interface can merge text and graphics easily and quickly within a single document, right from your word processor? What other interface gives you 4 resident fonts plus a font editor to capture all your favorite text styles, right from any popular word processor?

**O**nly Device One: Printer Interface! It will revolutionize your printouts with hi-resolution bit dumps, banners, calendars and much more. Device One: Printer Interface gives you desktop publishing features like the ability to print pictures in halftone and a Near Letter Quality (NLQ) mode for all fonts, pictures, etc. It also has a built in quick reference guide that tells you how to use every major feature at a touch of a button.

*Merge text and graphics easily and quickly within a single document, right from your word processor!*

**G**otcha interested? Maybe the 16K, fully accessible buffer is just what you need. Or a special mode that lets you print custom letterheads on every page. Also set top, bottom, left, right and window margins directly from your word processor. Even more interesting is its ability to print hi-res, halftone pictures directly from memory!

**R**eady to liven up your printing? Device One is now available to turn your most drab report into an attention grabbing, attractive presentation that will set you above the crowd. You'll produce professional reports that look great...and only YOU will know how easy it was to do...with the help of Device One.

**E**ither you have the power or you don't! Only Device One lets you download pictures, fonts, text files and disk directories from your disk drive. You can even print out disk directories, text files, etc., without destroying the program or data you were using. Simply download the directory into Device One's 16K buffer and print it out...There's never been a more intelligent interface!

*There's never been a more intelligent interface!*

**S**erious products, excellent values and a team of professionals to stand behind everything we sell. That's what Progressive Peripherals & Software, Inc., is all about. We price all our products to give you the best possible value for your money. Order Device One today, it's available for only \$119.95.

**S**uper savings if you act now! If you give us any old interface, working or not, you can buy Device One for only \$99.00 including shipping! That's over a \$20.00 dollar savings, but only if you act now. Send us your old printer interface and save \$20.00 today!

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# TAKE THE Q-LINK CHALLENGE!

IF YOU WIN, GET THREE PRIZES!

- A MODEM
- A FOUR-MONTH Q-LINK MEMBERSHIP
- LUCASFILM'S *HABITAT* SOFTWARE

## HERE'S HOW TO ENTER!

Simply complete the Challenge of the Month and send it with this coupon to Quantum Computer Services, 8620 Westwood Center Drive, Vienna, VA 22180. Attn: Challenge of the Month #\_\_\_\_\_ (fill in the correct Challenge of the Month number).

NAME \_\_\_\_\_

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PHONE NUMBER ( ) \_\_\_\_\_

## YOU MUST ANSWER BOTH QUESTIONS TO WIN:

Are you currently a member of QuantumLink?

- ☐ Yes—if I win, extend my membership for four months?  
☐ No—if I win, send me the Q-Link software and free four-month membership. If I get the Challenge correct but don't win, send me a free Q-Link software kit as a consolation prize.

Do you currently own a modem?

- ☐ Yes—if I win, send me a substitute prize.  
☐ No—if I win, send me the modem.

Complete the Challenge of the Month correctly and you will be eligible to win a great prize package!

Each month, 20 individuals will be chosen from the pool of correct Challenge entries and the winners will receive a prize package that includes all this!

- A free Commodore 300-baud modem (Model 1600).  
With this modem, you'll be able to hook up your Commodore 64 or 128 to a telephone and access QuantumLink, the official on-line service for Commodore owners.
- A free QuantumLink four-month membership.  
QuantumLink membership normally costs just \$9.95 per month, and includes unlimited use of a base tier of services and one free hour of access each month to special Plus services. As a Challenge winner, you'll get QuantumLink software and your first four months membership free!
- A free copy of Lucasfilm's *Habitat* software.  
*Habitat* is the new multi-player game that utilizes the QuantumLink network to interconnect thousands of Commodore owners from across the country. Participants can quest for hidden treasure, investigate intriguing mysteries, and participate in the ongoing drama of this innovative and exciting graphic adventure.

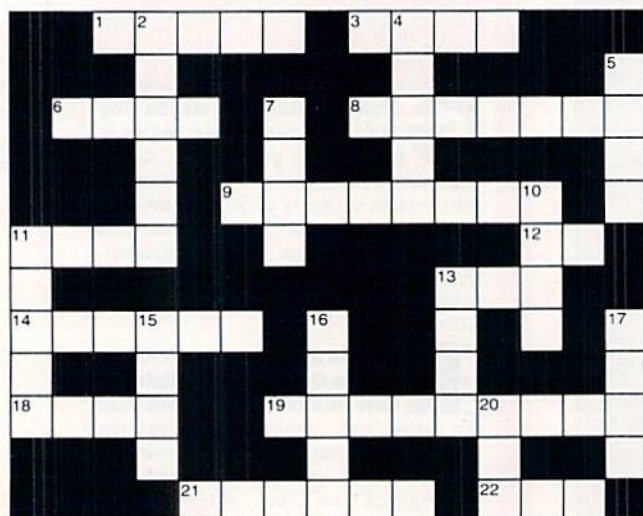
## Consolation Prize!

If the Challenge entry you submit is correct, but your name is not chosen from the pool of correct entries, you will be sent a Q-Link software kit for FREE!

## ACROSS

- A device that allows computers to communicate over telephone lines
- A display shown on your computer screen that gives you a list of options
- An organized collection of related records
- Lucasfilm's new on-line game
- To receive files or programs via telecommunications transmission
- A group of eight bits usually treated as a unit
- SCI \_\_\_\_\_
- Basic unit of computer memory
- A common programming error
- The case for an integrated circuit
- A magnetic device that reads from or writes to disks
- Make a copy of a file or program
- \_\_\_\_\_oni\_\_\_\_\_o\_\_\_\_\_

## Challenge of the Month #1



## DOWN

- To be connected to a telecommunications network
- Method of sending "letters" from one computer to another
- A command to break a program
- Initialization program that sets up the computer when it is turned on
- Items of information which can be processed or generated by a computer
- The most common microcomputer language
- A unit of information transfer
- Magnetic \_\_\_\_\_
- Nickname for QuantumLink
- \_\_\_\_\_group
- Read only\_\_\_\_\_ (abbreviation)



## REVIEWS

Continued from pg. 22

*Two-on-Two can be played by one player against a computer team, two players on opposite teams, or by two players working together against the computer.*

Another tip for rookie players is to watch the computer team closely. They exercise brilliant ball control and can show you some truly awesome moves. From behind-the-back passes to decisive slam dunks, it is poetry in motion.

Mindful of the 24-second shot clock, take some time and study the opposing team's defense. Wait for your teammate to make a move towards the basket and either pass the ball or take a quick shot. Your computer-controlled partner is quite adept at tipping the ball in.

A common mistake is to signal for a pass by tapping the joystick button, then moving your man before he gets the ball. Although at times it seems like your teammate has ESP, he cannot "lead" the ball and will only pass to the location where you pressed the button. If he sees you are open, he'll sometimes pass the ball without warning. Be alert, or the ball will go sailing into the bleachers.

Typical of a good sports game, the background graphics in *Two-on-Two* are colorful without distraction. The on-screen players are small but highly detailed and scaled. Dribbling, passing and crowd-pleasing hook shots are remarkably life-like.

Gamestar has gone to great lengths to capture every nuance of the game. This attention to detail includes numerous fouls and violations, three point shots, free throws, time outs, and even a post-game sports page listing vital statistics.

*Two-on-Two* is simply fantastic. In terms of quality and depth, this is one of the best sports simulations you can find. I predict *Two-on-Two* will reign as King of the Court for years to come.

G

## Device 9 THE-VAULT

**D**oes disk swapping seem to waste hours of your time? Are you tired of waiting to load programs with a 1541 disk drive? Do you hate searching through piles of floppies just to find that one, important file?

We at Progressive Peripherals & Software, Inc., have a solution to your floppy based problems! Introducing Device 9: The Vault, a 10 megabyte, fully Commodore compatible hard disk drive for the C-64/128. It's a Storage Vault for all your files and best of all, it works with all the standard DOS commands, including block read and write, fast new, memory command, etc.

**E**normous capacity! Imagine being able to store over 5000 files on a single drive...placing files in subdirectories nested up to 225 levels deep. Imagine how organized and productive you will be when all your files are safely stored in one place: The Vault!

**V**ery safe storage is what you get when you purchase Device 9: The Vault. This amazing hard disk can withstand 40g shocks, so you're assured those occasional bumps and knocks won't glitch any of your 38,000 blocks of data. There's even a "safety catch" that protects The Vault's read/write head automatically when you turn the power off. Plus it's backed by a five year replacement warranty. You know you can trust The Vault.

### Technical Specs.:

#### Formatted Capacity:

Per Drive	10 Megabytes
Per Surface	5 Megabytes
Per Track	8192 Bytes
Per Sector	256 Bytes
Sectors/Track	5.0 Mbits/sec

#### Access Time:

Track to Track	75 Msec
Average	110 Msec
Maximum	330 Msec

#### Reliability Specs.:

MTBF	12,000 POH
Preventive Maint.	None
MTT Repair	30 min.
Component Life	5 Years

**I**ndeed, Device 9: The Vault is the perfect hard drive for business or software developers. It's just right for BBS's and

## A NEW Hard Disk Drive For Commodore Computers

databases. Just plug into your serial port and the wall socket, and you're ready to go! Like a 1541, The Vault has two serial ports for easy daisy chaining. No need to worry about overheating either, Device 9 has a built in fan and its own power supply. The Vault will stay secure even for 24-hour BBS systems!

*Finally a quality engineered hard disk drive for the Commodore 64 and 128. This amazing hard disk drive can withstand 40g shocks!*

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**E**scape from the limitations of floppy disks! The time has come...there is finally a quality hard disk drive for the Commodore 64 and 128 computers. You can free yourself from total reliance on floppies, but only if you have The Vault to safeguard your files.

A parallel interface option is also available which makes The Vault TEN times faster than a 1541!

Device 9: The Vault and many other innovative products are now available at your local dealer, or directly from Progressive Peripherals & Software, Inc.

For more information about Device 9: The Vault please call or write us.

Write for our free catalog. Please include computer brand.

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## SILICON VALLEY

Continued from pg. 64

**Electronic Arts** is going to port **Ultima III** and **Ultima IV** to the Amiga. They also have commissioned R. J. Mical to create a game. Watch out!

Finally, **Lasergamesmanship** has finished their light pen and software driver for the Amiga. All you graphic artists who have been waiting for a light pen, your time has come. They have also designed a light gun, that can be used in combination with a projection TV. You stand on the other side of the room and control the display and pull down menus. Great for business presentations and educational environments. It has applications in the handicapped world as well. One version of the light pen has two buttons on it, another lower-cost version uses keyboard equivalents. The driver will also support several other light pens, including the **Flexidraw** pen.

### Activision

2360 Bayshore Frontage Road  
Mountain View, CA 94043

### Aegis Development

2210 Wilshire #277  
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### Chestnut Computer Graphics & Sound

POB 417  
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## CORRECTION

There were two errors in this column as it appeared in the September/October, 1986, **Commodore Microcomputers**.

**GeoCalc**, **geoTerm**, **geoBase** and **geoBASIC** are applications in development by Berkeley Softworks, not Aegis Development.

**PaperClip II** is for the Commodore 128, not the Commodore 64.



## REVIEWS

Continued from pg. 30

the game is to get you involved, and it will. Besides, how many times before have you booted up a game and started to play without even glancing at the instructions? You're probably more accustomed to this approach than you think. In the end, you'll find that the toughest part of the game won't be solving it, but keeping the solution a secret from your friends.

### Hacker Hints

My lips are sealed. You won't find any nation-saving secrets here, just a couple of guidelines to help you to develop your own strategy. Don't be too concerned if some of these tips don't make immediate sense. In the end, they will.

- Although the cameras linked into the MFSM were designed to keep watch over the entire Soviet military installation, there are some blind spots where your Mobile Remote Units (MRU) can pause undetected. Movement from one section of the complex to the next might be facilitated by using these structural hideaways as temporary rest stops.

- To help set up your plan of attack, note that cameras 1 through 21 cover the hallways, with 22 through 38 monitoring the rooms and vault. The hallway camera circuit takes about 45 seconds to complete. So as long as the roaming guard isn't on top of you, there are predictable blocks of time where large stretches of hallway can be traversed with minimal chance of detection. Be patient and wait for the right moment.

- While we're on the subject of the roaming guard: It takes him just under four and a half minutes to complete his rounds around the complex. By watching the timer, you should always be able to pinpoint his location. Don't let him stumble over any of your activities.

- When a MRU is detected and the security siren sounds, it's time to experiment. The Annihilator sent out to destroy you is quicker than your unit, and I've yet to out-manuever and lose it in the maze of rooms. It's relentless, and sooner or later you will be caught. But that doesn't mean that you have to stand around and make things easy. Run through the halls, check passageways, rummage through the file cabinets, try the ridiculous. You never know what you might uncover. In its final moments, one MRU might blaze a winning path for the next.

# Superbase 128

## Programable Database For the Commodore 128

**S**uperbase the only fully programmable database for the Commodore 128. The first

time I saw Superbase 128 in action was while I was in England. I was so impressed by the sheer power of Superbase that I bought several copies to manage my office better. Many of my friends and business associates wanted copies for their own use. A distribution network was born!

Now, Progressive Peripherals & Software is the exclusive distributor of Precision Software products in North America. You just can't find a better database for the Commodore 128! The easy to use, menu driven approach means you'll be up and running in minutes. You won't have to waste hours fighting a bear of a manual when you own Superbase 128.

**U**ntil you sit down and use Superbase 128, you won't believe what it can do for you.

Superscript 128, (the word processing program from Precision Software), co-resides in memory. Now you can easily swap data between Superbase 128 and Superscript 128, without swapping disks.

Of course, you'll be able to take full advantage of the space on all Commodore disk drive models. Upgrading to Superbase 128 is no problem. Superbase 128 can read ('import') data files from Superbase 64 and many other database programs to guarantee data compatibility. You'll love the flexibility of 40 or 80 column screen support too!

*Find any record you want in less than three tenths of a second with your 1571 disk drive. That's fast!*

**P**rogram with over 100 extended Basic commands. Superbase 128 uses version 7.0 BASIC

commands which let you design serious custom applications to handle your toughest chores. Complete subtotalling, percentage and other mathematical functions turn your Commodore 128 into a proven system able to manage complicated business applications.

Organize all your information in the flexible and functional Superbase 128. Superbase uses state of the art indexing to make file accessing almost instantaneous. Find any record you want in less than three tenths of a second with your 1571 disk drive. Regardless of your file size!

**E**ven change field specifications without restructuring or losing your entire data file.

Superbase 128 works smart to save you time. Simply add, change or delete a field, and you're ready to go! No file updating or time-consuming disk access...Superbase 128 is ready when you are.

*The easy to use, menu driven approach means you'll be up and running in minutes.*

**R**eflections of one Superbase 128 user. 'It does everything I want it to! The programming

capabilities of Superbase 128 lets me build my own system of menus. My office is completely organized the way I want it. Now everyone in my office can easily access customer files...without knowing anything about Superbase! That's a big help to me and my customers - it saves time and money!'

For more information about Superbase 128, please call or write us. Now available at your favorite dealer for only \$99.95.

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Continued from pg. 117

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***Really insidious Avatars can follow others around and spy on them to learn the object of their quest, then try to beat them to the treasure. Or you might find the key that opens a treasure chest, grab the gold and replace it with a dead fish. Quite a surprise for the next Avatar who opens the chest.***

---

herders, storekeepers and dance hall girls settled the Old West. In *Habitat*, Avatars might meet and organize Adventure Guilds or Warrior Guilds that meet regularly at someone's turf to decide what they want to do.

And when groups of people interact, politics emerge. Maybe the Warriors will decide to spy on the Adventurers, figure out what they're up to and perhaps even interfere. As groups organize and encounter other groups, there will be disagreements that could turn into feuds, like the range wars between the cattlemen and sheepherders of the Old West. Likewise, cooperative agreements might result in the exchange of information and goods.

Where groups of people gather, there are always issues that result from their interaction—and individuals who use those issues to create a political base. Will someone organize an election and run for President, even King, of *Habitat*? That's an intriguing possibility. If that does happen, it could someday lead to a revolution or coup d'état. As I mentioned previously, you can kill people in the game. Morningstar says it won't be easy. The Oracle will reincarnate anyone who gets knocked off, but not necessarily in the same shape as before—a lot depends on your conduct and what led to your death.

You don't have to earn a living, since each Avatar has a trust

fund and can live off the interest by withdrawing money from the bank in the form of tokens, or using the *Habitat* credit card. Even though making money or collecting lots of stuff is not a primary objective, you can pursue these goals if you so desire. People can pool their resources—money and objects—to start a business or a company. Experienced Avatars might set up guided tours for newcomers, charging them for their trouble. Unscrupulous ones could lure people into the forests and rob them.

Really insidious Avatars can follow others around and spy on them to learn the object of their quest, then try to beat them to the treasure. Or you can just play tricks on people. You might find the key that opens a treasure chest, grab the gold and replace it with a dead fish! Quite a surprise for the next Avatar who opens the chest.

Since only six people can be in the same region at once, you could conceivably bar entrance to some parts of the world by blocking a key region. What good would this do? It depends on what's on the other side. Maybe you could even charge people a toll for passing through. Anti-social troublemakers might form a street gang and harass any Avatars wearing green pants. Then others could start up a police department or vigilante group to protect the people wearing the green pants. Wearing green pants might turn into the latest trend, for practically anything that can happen in a real society—fads, gossip, rumors, slang, weird cults—could happen here. (I'm thinking of establishing my own religion, the Church of the Holey Doughnut.)

These are only a few highlights and potential pastimes in store for those who visit the remarkable world of *Habitat*, whose ultimate success depends as much on the imagination of the players as that of the designers. Initially, it will simply be an environment with numerous possibilities for creation and recreation. As more people "move" to this alternate reality and set up housekeeping in their new turf, it will become a genuine society that evolves and grows as people interact and experiment, as new neighbors move in next door and more regions are added.

As I drove back to Pennsylvania late that night, I nearly ran off the road a half-dozen times thinking about what I would do when I get to *Habitat*. If you want to find out, give me a call at my turf when you get there. The number's not in the book yet, but you'll find it in my *Adventure Road* column, where I'll be reporting regularly on what's happening in *Habitat*.

C



## REVIEWS

Continued from pg. 40

five year-old son can handle such simple controls without adult supervision.

The single complaint I have is that both programs are heavily dependent upon the disk drive. Because small children are by nature more careless than adults, I prefer my children use programs which do not require the disk to be removed from the drive. Because of the complexity of both games, both sides of the program disks are required to store all the data used to design the different displays and enable to different modes of play. This means delays must be endured while the disk is accessed, and there are occasions when the disk must be removed from the drive and turned over.

As a result, an adult must remain nearby when small children are playing. Of course, if your children are like mine, you won't be able to get far from the computer anyway—they will either be calling you to see the neat thing they are doing or your own curiosity will keep you close by to see what they are laughing about.

For a young child to get the full benefits from *Fantastic Animals*, an adult should assist them playing Take the Animals Home. Unless the child can read, or already knows the habitat of the different animals, he or she will need some help identifying each. Neither of the other two options in *Fantastic Animals* and none of the options in *Creative Contraptions* require an adult's supervision (except when the disk needs to be turned over).

Both are cleverly packed imagination stimulators and do exactly when they are billed to do—provide constructive play time. An educational program also must pass three tests: Its lesson must be worth learning, it must be interesting enough for a child to want to play it, and the lesson should translate well to the computer. In fact, the computer should be even more effective presenting the material than traditional methods.

Both *Fantastic Animals* and *Creative Contraptions* pass all three with flying colors. These are programs which your children will want to play. I found the time spent with my children playing these was as rewarding for me as the play was for them. If you are looking for a good excuse to spend some quality time with your children, try *Fantastic Animals* and *Creative Contraptions*. Both will make you laugh.



# Superscript 128

## Word Processor

### For the Commodore 128

#### SUPERSCRIPT 128

The Better Word Processor

By Steven L. Spring

President of PP&S

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## REVIEWS

Continued from pg. 36

check features of a word processor, so I was happy to find that *PaperClip II's* dictionary had grown to 38,000 words. (The first version contained 20,000 words.) But just as impressive as its size is the speed with which the speller works. Even with a file of over 400 lines, the speller examines all the words in under 60 seconds. Again, anyone who has ever been tempted to take a coffee break while waiting for their speller program to test a file will appreciate the speed.

Another important feature which Batteries Included did not skimp on is printer compatibility. *PaperClip II* comes with a battery of printer files which automatically establish printer/program handshake. Anyone who has ever wasted precious hours trying to get Brand X printer using Brand Y interface to work with Brand Z word processor will love this.

If your printer is one of the few not directly supported via a printer file, one section of the user's manual is dedicated for creating customized printer files. *PaperClip II* also works with not only serial and parallel printers but RS232C-controlled printers as well.

But more than being a word processor that takes advantage of the 128's memory (future enhancements will take advantage of expanded memory via RAM disk), speed and expanded keyboard, *PaperClip II* also comes with a terminal program.

The 40/80 column multi-protocol terminal program can function in one section of the 128's memory while word processing is resident in the other. The two programs are toggle-activated via the computer's NO SCROLL key. Because the terminal program is menu-driven, it is amazingly easy to use. Anyone who has ever used a terminal program should be able to use this one without referring to the manual. I can say this because at the time of this article, the terminal software section of *PaperClip II's* manual was yet to be written. But without the reference, changing baud rate, using the auto call system, saving phone numbers, setting duplex and toggling between Punter and Xmodem protocol entail only calling up the correct menu, highlighting the option, and inputting the command.

The terminal program uses two menus to select settings or activate features. They are called by pressing either the F1 or F3 key. The F1 menu lets you change the baud rate (50-9600), parity, word



## REVIEWS

length, duplex, either capture or send the buffer, select Xmodem or Punter protocol, and select the modem type being used. The list of supported modems includes Hayes, Mighty Mo, HesModem II, VicModem/1600, 1650, 1660 and 1200/1670.

Those who like (or need) to keep track of their on-line time will like the two clock displays. I found the clocks useful when running either the word processor section or the terminal program since they continue running regardless of which program you are using. If you are in the word processor, press the NO SCROLL key to check the time, then press it again to continue writing.

The F3 menu lets you dial numbers either automatically or manually. The program also lets you store up to ten phone numbers for reference.

The terminal program's status line continuously displays the current baud rate, word length, parity and duplexing plus the time clock and the line and column of the cursor's location.

While few people in the market for a word processor are at the same time looking for a terminal program, the fact that *PaperClip II* packs both is a plus. The word processor combined with *Spell-Pack* alone is worth the price, so I consider the terminal program a bonus. It is a good terminal program, which offers both Xmodem and Punter compatibility, 80-column display, and guarantees error-free transmission at speeds as high as 2400 baud.

Instead of employing a disk protection scheme, *PaperClip II* requires a security dongle be inserted in joystick port two before it will work. This means the user can make as many back-up copies of *PaperClip II* as they desire. Most importantly, it means you will never be without your word processor, even if the dog eats the original.

*PaperClip II* is a well designed word processor with some very impressive features. Multiple disk support, spell-checking, screen preview printing, fast editing commands, as well as column and math manipulation capabilities are included.

*PaperClip* users thinking of moving up to the 128 will especially be interested in this word processor. Because the program can handle both PRG and SEQ text files, users of earlier word processors (other than *PaperClip*) should be able to load and edit those files using *PaperClip II*.

G

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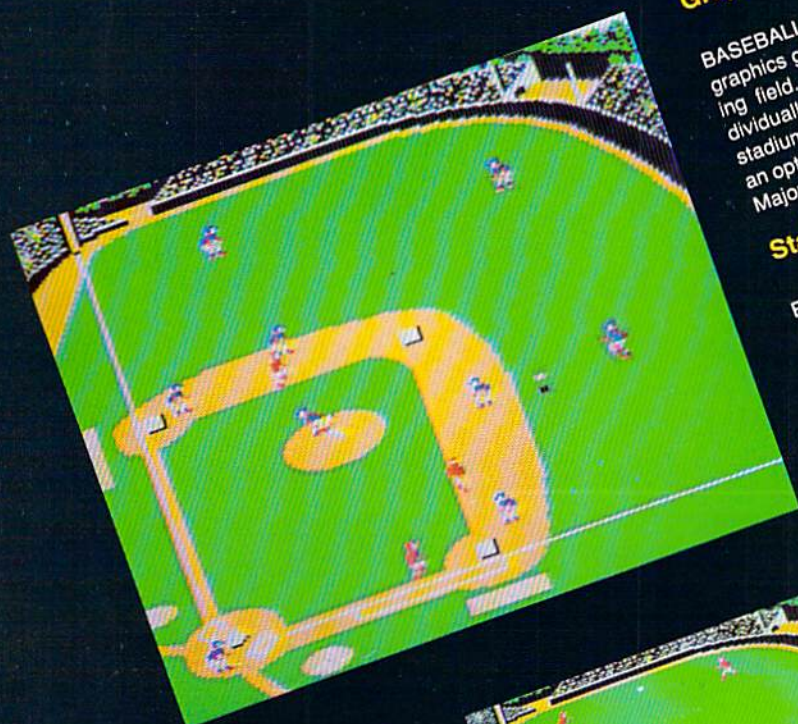
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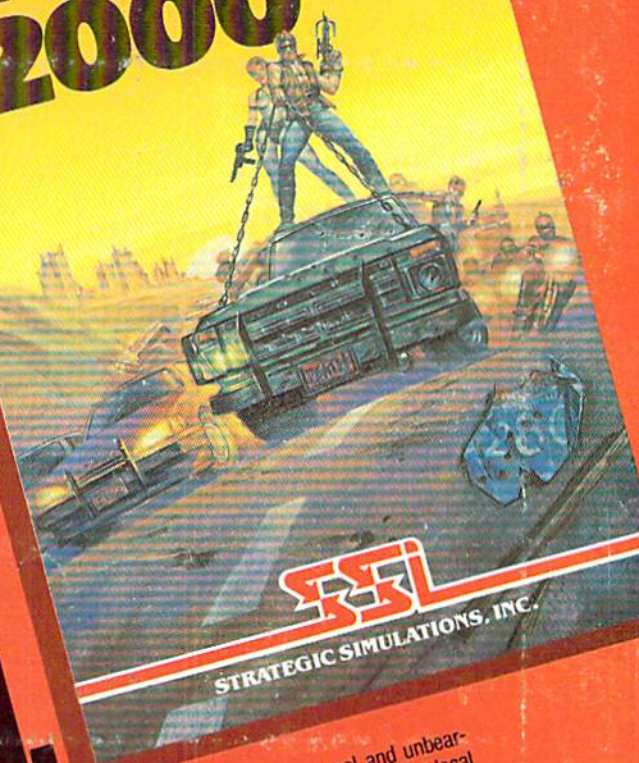
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